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The Agricultural Student



October 1912

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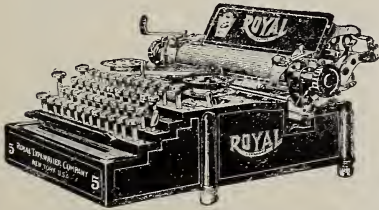
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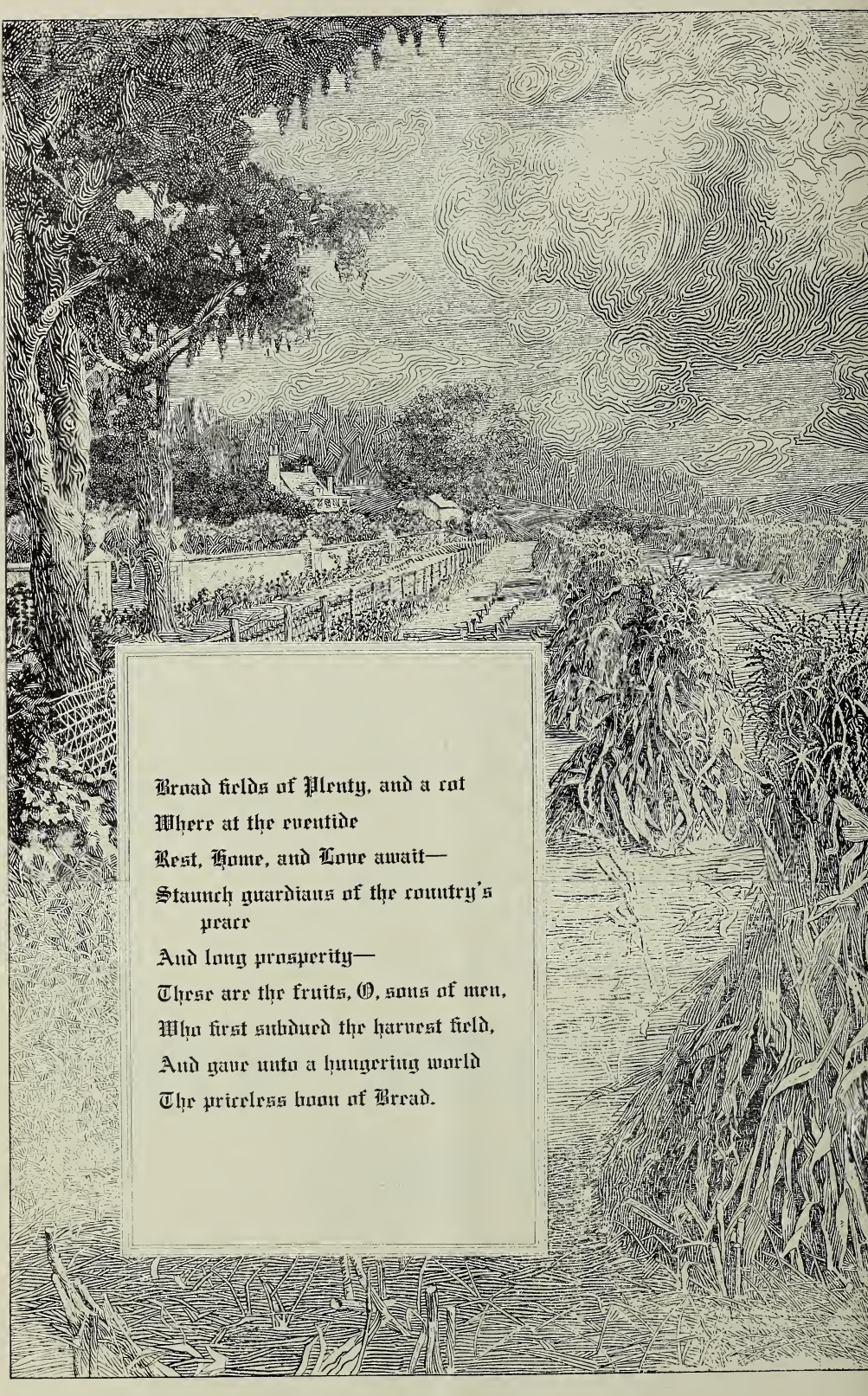
So. St. Joseph
So. St. Paul



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Broad fields of Plenty, and a cot
Where at the eventide
Rest, Home, and Love await—
Staunch guardians of the country's
peace
And long prosperity—
These are the fruits, O, sons of men,
Who first subdued the harvest field,
And gave unto a hungering world
The priceless boon of Bread.

THE AGRICULTURAL STUDENT

Vol. XIX.

OHIO STATE UNIVERSITY, COLUMBUS, OCTOBER, 1912

Number 2

Present Conditions and Future Prospects of Ohio Live Stock Industry

CHAS. S. PLUMB,
Professor Animal Husbandry

IT has been the business of the writer during the past ten years, to keep in close touch with the stockmen and the live stock interests in Ohio. This has been accomplished in various ways, not the least of which has been personal contact, through visit, with existing conditions in widely different parts of the state.

A knowledge of present conditions must, in a considerable measure, enable one to draw conclusions regarding the future. What are some of the existing condition in Ohio to-day that are clearly apparent to all observing eyes?

The number of farm animals, in proportion to land under farm conditions, is decreasing rather than increasing. Two sections of the state, that should show a large population in farm animals, present just the reverse condition. A trip through many sections of Southern Ohio, among the hills, will show a scarcity of live stock that many might be inclined to doubt. Here the opportunities for cultivation are more or less limited, yet live stock in this part of the state should be an important factor, for stock can be produced on the hill-sides, where cultivation of the land would be quite undesirable. If we turn to the richest sections of Ohio, and look into the part covered with wide stretches of corn, we also notice that even here, where feed is very abundant,

live stock is not conspicuous. In much of the state west and north of Columbus, where formerly many cattle were fed, we find but few to-day. County fairs that ten years ago had large local live stock shows, to-day have most meager exhibits. The writer has talked with many live stock feeders in Ohio, and they all voice the one sentiment—the stock is not in the country. A few years ago many feeders were brought into the state from Texas and the West, but this has been largely discontinued. For some months this Department has been corresponding with stockmen in various sections, in search for meat stock of superior grade, and the replies to letters have been most disappointing and not at all complimentary to the stock in the country.

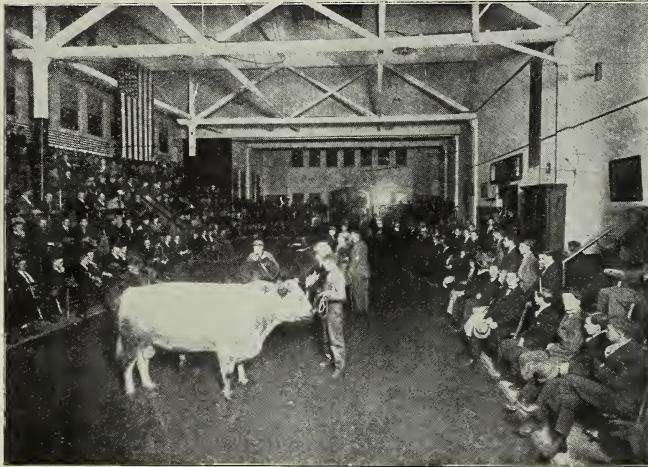
While the quantity of live stock in Ohio is of interest, its quality is an important guide as to what our stockmen are doing. In this connection, I have been impressed in two ways, first, by the prevalence of what is apparently pure bred stock, and secondly, by the character of the demand for breeding animals.

If we look the facts squarely in the face, we find a vast majority of our farmers keeping stock without any regard to policy in breeding or the value of breed or high grade ancestry. On every hand mixed herds are the rule

and pure bred ones the rare exception. On October 1st, I made a trip between Columbus and Kenton, a distance of 60 miles, through a live stock section. As a matter of interest, I checked off the apparent blood lines of herds of cattle seen from the car window along the way, until I had seen 50 herds of three or more in the group. Eight of these showed the earmarks of three distinct breeds, 28 of two, and 14 of one. Some of these may have been pure bred, but only in very limited numbers. This is

do this at the expense of meat production and maintaining soil fertility is most unfortunate.

Why is it that outside of hog production, men are growing large areas of grain and selling it to the elevator? Why is it that in the southern half of Ohio so little live stock is to be found to-day? Various excuses are offered. The high price of feed, the high price of land, the inability to buy feeders, etc. Yet we have great areas of pastures with almost no stock on them.



LEARNING OF BETTER BREEDS.

simply an example of what one may see in traveling over the state. Where pure bred sires are used, what are our people buying? In many cases animals that should have been sold to the butcher. It is true we have many high class stockmen in Ohio, who are using superior breeding males, but compared with other countries, we have a fearfully large percentage of men who seem satisfied with most anything. These are the ones who drag down our live stock to the lower levels.

In recent years, dairy cattle have been receiving much attention in Ohio, and that in itself is commendable. But to

Ohio is naturally a live stock state. Her great pastures and fields of grain demonstrate this. Compared with Illinois and Iowa, we have much land far better fitted for live stock than these states, yet Iowa looms up as America's greatest live stock state.

The future live stock development of Ohio cannot be definitely determined by any man. Yet I am loth to believe that the present generation will not see the serious loss due to present conditions, and will turn to the right way. This naturally will come through the uplifting influence of the College of Agriculture, the Experiment Station,

the Board of Agriculture, and the live stock and general agricultural press. Every man who has been a student in the Agricultural College should consider it an obligation to preach the gospel of farm fertility as maintained by an intelligent live stock husbandry. He should not only preach, but he should practice. His life on the farm should be an example of right living and correct methods. In any event, he is sure to show his friends and neighbors what agricultural education has done for him.

uplift rather than otherwise. Yet it is highly essential that, through organized effort, the various associations identified with live stock promotion, become larger and more influential. The introduction of community breeders' association is sure to grow in Ohio, and do a world of good, as is already the case in certain sections of America and Europe. Our people also, as a matter of state pride, will seek to produce larger numbers of superior stock, rather than lose trade to states producing better than our own. In that day a



THE PROFITABLE TYPE.

The future will see a great increase in the amount of live stock in the state. The great movement in behalf of agricultural education, which is reaching into almost every town and hamlet, will

stallion license law will easily become a factor in horse development in Ohio. Scrub stallions will then be unpopular, and will have no place here.

Let us all unite for Ohio's welfare.

"Tall and beautiful he stood there,
In his garments green and yellow;
To and fro his plumes above him
Waved and nodded with his breathing,
And the sweat of the encounter
Stood like drops of dew upon him."

—Song of Hiawatha.

For Better Seed Corn

C. P. HARTLEY,

Physiologist in Charge of Corn Investigation, United States Department of Agriculture

SOME idea regarding the economic importance of corn may be had by a realization that in the United States it exceeds in acreage, yield and value, wheat, oats, barley, flax, rye, buckwheat and potatoes combined.

An increased value of one per cent per bushel would mean an additional income to the farmers of the United States of twenty-five million dollars, while an increased production of but one bushel per acre at fifty cents per bushel would add fifty million dollars annually to the national wealth.

In addition to its magnitude, the crop is important because of the wide range of industries in which some portion of the corn plant plays a more or less important part. In fact, it may almost be said that there is no industry into which some product or by product of the corn plant does not enter. Therefore any conditions which effect the production of this king of crops are of interest to every citizen of the United States.

Each spring many farmers discover—when it is too late—that their seed corn either fails to germinate or produces but a weak growth. They must either pay high prices for viable seed, which may or may not be acclimated and adapted to their conditions, or by means of laborious tests they may pick out such of their seed as will at least “come up.”

The corn crop of 1912 is now practically made and the time for selecting seed for 1913 has arrived in the southern sections and will reach even the latest sections of the United States sometime in October. Unless sufficient seed corn is selected at the right time in

the right way, there will be the same deplorable situation next spring—again when it is too late—as there has been at each previous planting time.

With very few exceptions the best possible seed may be selected on the farm on which it is to be planted, and by carrying out the following instructions, issued by the Office of Corn Investigations, of the United States Department of Agriculture, each farmer may provide himself with an abundance of seed of the highest productivity, for planting in 1913.

The process of seed selection is of too great importance to be conducted incidentally while husking, and in many localities if selection is delayed until husking time, the vitality of the seed will have already been injured by an early frost. As soon, therefore, as the crop ripens, go through the field with bags and husk the ears from those stalks which have produced best without having had any special advantages, such as space, moisture or fertility. Late maturing plants with ears are heavy because of an excessive amount of sap should be ignored.

In the Central and Southern States, other things being equal, short, thick stalks are preferable. These permit of thicker planting, are not so easily blown down, and are usually more productive than slender ones. The tendency to sucker is hereditary. Other things being equal seed should be taken from stalks having no suckers.

The same day that the seed corn is gathered, the husked ears should be put in a dry place where there is good circulation of air, and placed in such a manner that the ears do not touch each

other. If no previous arrangements for caring for the seed have been made the ears may be suspended with binders twine, tying them about two inches apart. The twine will support fifteen or twenty ears.

If this method cannot conveniently be followed, tables may be improvised by placing boards across boxes or barrels. These boards should be dry and not too wide, and should be spaced one or one and a half inches apart. The seed ears can be put on these tables using care to have them spread out to insure a good circulation of air among them. It will be advisable to move the ears a couple of times at intervals of about two days, when first put on the tables.

Whichever method is used, the seed should be placed in a shed or building, having a good circulation of air, and where it will be protected from rain and excessive cold, as well as from rats and mice.

Do not store the seed in a cellar. The driest cellars are too damp and do not afford a free circulation of air. Do not

store the seed in a room in which there will be vapor to condense on it and prevent its drying, as in a barn over stock, or in an outhouse used for washing, etc.

If seed corn is stored properly it should be thoroughly dry in from three weeks in the South to eight weeks in the North, and if kept dry it will be safe from injury except by insects and vermin. In the North the ears may be left where they were dried. In regions where seed corn is damaged by weevils or grain moths, it should be packed in boxes and treated as described in Farmers Bulletin 415, entitled "Seed Corn."

By the proper selection and care of seed corn, as outlined above, the yield may be greatly increased with but a slight additional expense. Increases of 18 bushels per acre, due to properly preserving the seed, have been obtained.

In every phase of present-day agriculture, the tendency is toward efficiency. The days of large profits under profligate methods have passed, and there is no cheaper or easier way of increasing the profits from the farm than by properly selecting and caring for your seed corn.



"THE EARS MAY BE SUSPENDED WITH BINDER TWINE."

Around the State Fair Circuit

SAMUEL R. GUARD

IT is a rare privilege to tour a state fair circuit, seeing an exhibition both from before the footlights and behind the scenes, to study the mechanism, to take notes, to criticise and praise, and then after it is all over—to just draw your own conclusions.

The harvest moon shines on most state fairs, and shines so beneficently. It is a gladsome season. Farm folk are glad and thankful and expectant in the hope of well-filled bins and heaping cribs and bursting mows. It is a season of exhibition. Every man wants to show the best he has, even if his supreme effort can only result in placing himself on dress parade. It is an instinctive trait, inherited from stone age ancestry, for man to want to show himself, and in this modern day it all finds expression in our grand spirit of exposition.

To their exhibition festival then, men bring the best product of their labor and their fields, bring what they regard as the acme of excellence in sheaf and fruit and flower. And what an array of state-pride object lessons they make, spread to from a great exhibition in themselves. Here the visitor gets his idea of the fundamental resources of the state and of the promise held for the future. All too many dash through these exhibits at full speed, when the lingering, gazing gait of the interested, idea-absorbing personage would mean better agriculture, and more profitable.

The ladies at every fair continue to astonish their own men folks by what they really can do, and how beautifully, when they take a notion and hanker for such decorations as first premium blue ribbons. Since domestic science is the foundation of all agriculture, as well as every other kind of culture, this

display is always crowded, particularly so since the check room for babies is always in close proximity to this department and since it has become the mode for those men fortunate enough to have wives to make this a place of rendezvous after said men have seen everything of interest for and by themselves.

Dairymen and poultrymen can always be depended upon to stage displays of largest caliber, for in these industries there is more of progression and the advertising spirit than other branches of agriculture are blessed with. Ohio sets the pace in dairy and poultry exhibits, probably because her great University occupies so much of the foreground in each case.

"Acres and acres of machinery" will apply to most any state fair, without straining the truth the "leastest." It is a significant development, too, it suggests a vital problem in our rural system. Labor is scarce. The cog-wheel age is ours. Any machine which can do work and conserve human muscle is more than welcome. And so America's inventive genius has banked our fair grounds with all manner of devices for work and for comfort.

The colleges and experiment stations influence on the state fair is the most evident of all the forces at work. Everywhere their exhibits are crowded, everywhere a never-ending stream of people thirsting for the quenching knowledge of the modern agriculture keep attendants and exhibits busy. And nowhere is there a finer display by college or experiment station than one finds at Ohio. It leads one to think that Ohio has the most wide-awake agricultural conscience to be found anywhere, awaiting but the finishing touches of the masters

to establish her clearly as the most productive fountain head of the ideas that constitute new agriculture.

Towering high above all the surrounding features at the state fair is the live stock exhibition. This is not because animal husbandry is of such greater relative importance, but because exhibition is a natural complement of live stock practices. It affords opportunities for publicity and for sale of surplus stock. The congregating in the show-ring redounds as greatly to the value of exhibitors as of the public. When the breeders rub elbows and knock off the corners of person preference and bias against the breed judge's stern breed ideals, it means a renewed effort to follow less after fadism and more after standard idealism.

But after all it is the zest of the game that appeals so strongly to the herdsmen and horsemen and flockmasters. It means something to have enough blue ribbons to weave into a banner. Purples and royal purples of championships and grand championships spell splendid supremacy in the favorite line of endeavor—mean recognition of a service faithfully performed. Think of the planning of a mating, the delving into breed history and into records of ancestry in order to determine the best combination for the building of a championship probability. Behold the bundle of possibilities and hopes enwrapped within the skin of calf or pig or lamb or foal. Watch it grow. What satisfaction in feeding, in pampering, in petting, in fitting, in training. Then see the master lead out his work for inspection and rating. Experience his heartthrobs as the judge's careful eye takes in every excellence and notes every fault of his favorite. Note the anxious eye as he awaits the stationing of his animal, literally the result of his planning and his

building. Did'st ever see a prouder step than that of the lad at the end of the halter rope at the top of the line? Did kings ever exhibit finer achievement. Oh, that is joy indeed, when the breeder or fitter takes the blue ribbon for his own, his by right of conquest, to have and to hold. Ask those who brought out Ohio's Hero or Rob Roy or Ohio's Baron, and be convinced. Visit the stalls after eventide at the fair and come away singing with Kipling:

"The ways of a man with a maid are feeble and tame

To the ways of a man with a horse, when selling or trading the same."

So it is that at every state fair the hub of interest revolves on the axle of the live stock exhibit. The battle of the ribbons is there the fiercest and there are the spoils most highly prized.

After all is said, the most interesting show at the state fairs is ourselves. We are truly a wonderful people in a wonderful age. At most state fairs we go herding and crowding and jamming into the fake midway productions and leave the sheep to be judged with an audience of just as many people as there are sheep to hold. This is not a hypothetical case, but an actual scene. And truly one is proud of being a Buckeye because Ohio has no such "carrin's-on" at her fairs. Of all the state fairs Ohio receives the palm for cleanliness, purity of atmosphere, absence of senseless, bawling, screeching, nauseating Oriental demonics, venders of cure-alls, and rascally fakirs of any Hugonian description one cares to apply. Why other fairs permit such reeking stenches on their otherwise beautiful and sanitary fair premises is beyond the ken of those who claim Ohio as their home.

And while we are dwelling on Ohio—Ohio was truly designed to lead. Ohio's

fair is unexcelled in beauty of environment, in style of architecture, in plan of execution. Her buildings admit no superiors. Give her a judging coliseum, such as Indiana boasts, and she will be as near the goal of perfection as the best. How she needs that pavilion! What a crowning capstone it will be. Come to Hoosierdom for a minute, just for the sake of "odious comparisons." At Indianapolis the live stock coliseum is the center of the fair. A great structure of concrete stucco and steel; it is imposing. Inside it is a monster tank-bark arena. From the girders above are swung such a gay colorful mass of banners and bunting and flags and roses, draped in such artistic manner as to captivate one at once and whirl him off to fairyland. The band is playing. Thousands of people are cheering. And there, at the entrance, comes the vanguard of the live stock parade. A majestic Shorthorn king heads the line. Following come the long line of "red, whites and roans," the "white-faces," the "doddies," the "shaggy coats;" then the meek-eyed matrons of the pail, the beautiful dainty Jerseys, the yellow-skinned cattle of the smaller Isle, "the blacks and whites, the Scotchman's dairy "coo," maybe a string of the diminutive Irish black ones; then the horses, the drafters, prancing, proud, powerful, the best of France and Scotland and England and Belgium; the Hackneys folding their knees to their chin, the ponies, the——, but why go on forever? See the maze as it winds about. See, think, and think fast. There is more farming inspiration there than these people will know until they see it again next year. And as it passes out, the great good which such an institution and such a scene would have for Ohio is an uppermost thought. And

Ohio is to have it. Ohio always has for herself the finest and the best.

Each fair has its own claims for superiority, its own challenge for our attention. At Ohio one sees the greatest sheep show in the world. At Indiana the colorful scene within the coliseum is worth going miles to behold. At Wisconsin could be seen the original centrifugal milk tester, made by Dr. Babcock's own hands. At Michigan the judging rings under the chestnuts and elms carried one's fancy across the seas to the cradle of the breeds and the romantic history of their ringsides—such ringsides as these. At Minnesota all is stupendous, and the co-operative spirit of doing things seizes one for its own. At Iowa cattlemen make history. At Kentucky the most beautiful of equines, the American saddler, is the center of things. At New York, the dairy cow it crowned. At Memphis, the New South is visualized. And so on, each with a myriad of lessons, each mirroring the state's destiny for those who can see well, and her prosperity for those who do things by glances.

And after it is over, the fair season, we see its chief value as a history weaver, a modeler of the movement of our agriculture in the clay of memory. How valuable all this aftermath is, few realize. The web of live stock showing and the woof of agricultural exhibition are woven into a record of the past and a prophecy of the future. Rare, indeed, are those men who know fair history, who can tell of the battles of Gay Monarch and Young Abbotsburn, the sensations of the Prime Lads, the advance of the Erivas, the achievements of a Morvin, the sweeping victories for Clyde Mains, the triumphs of the Long-fellows or Meddlers or Cols., etc., etc. What a fascinating story it is. And

daily there walks on the Ohio State campus a genial, kindly Scot, one of those rare spirits which only appear once in a century, who knows of American show yard history as few others do. It is such men and such effort as comes from such souls that have made this show yard institution what it is. To know that the lads of the ring to-day, the young men who are following these beaten paths of the patriarchs—to know that the boys of to-day appreciate what the boys of yesterday builded, mayhap such a knowledge is some little recompense, some small reward for the pioneers of the show ring.

And with more space and more time and more paper and more brains, we

might draw other hints from the fairs, but alas, in comparing Ohio's fair with other fairs, or Ohio's institutions with other institutions, it's of little use, for one who can say with Riley's "Old John Clevenger":

"I'm Ohio-born—right whare
People's all called 'Buckeyes' thare—
'Cause, I'spose, our buckeye crap's,
Biggest in the world, perhaps!—
Ner my head don't stretch my hat
Too much on account of that!

* * * * *

Jis the Buckeye, whare we air,
In the present times, is what
Ockupies my lovin' care
And my most profoundest thought!"



AQUEDUCT AND BASINS, WALHONDING RIVER AND WALHONDING CANAL, NEAR COSHOCTON.

Photo by C. M. Hay.

Picturesque Ohio

HOLLIS KIGHT

"**W**HY," exclaimed Andrew Carnegie, as he stood on the summit of Gambier Hill amid the classic scenes of Kenyon and surveyed the beautiful valley of the Vernon River, "Why, I thought Ohio was flat!"

Mr. Carnegie did not speak in the sense of meaning that Ohio was "flat, stale and unprofitable." Any steel or oil king would know better than that. He simply voiced his former ignorance of the true physical aspect of the great empire deservedly called "Picturesque Ohio," and expressed his delight at the revelation which had burst upon him.

do not hesitate to assert that the freshness of the inland and unsalted sea is a charm peculiar to itself. We have vast tracts of beautiful rolling country, rich in pastoral scenes not surpassed anywhere on this green earth, diversified by shady woodland, smiling pastures and fertile fields. We have our forests of native trees, carpeted with a wealth of native flowers differentiated as to their characteristic beauty from the river to the lake. We have our rugged hills, as wild if not as mountainous as any that stand sentinel over the Alleghenies or the Catskills. We have the



HALF MOON BEND ON THE OHIO

Among those who know the Buckeye state no exception will be taken to the assertion that her borders contain a wonderful variety of scenic beauty, comprehending, except for the most mountainous districts of other but on the whole less favored localities, all the beauties of some sister states noted for varied forms of physical attractions. We have our Hudson and our Merrimac in our Ohio and our Muskingum. We have the coasts of the East and West in our Great Lakes, save for the salt air and water; and there are those who

lowlands of our river courses richer in the darkened hue of upturned soil than the Valley of the Connecticut. In the watery expanse that lies between our northern boundary and the Canadian line we have a group of romantic islands unrivalled in the scenic glory of Occident or Orient. We have great artificial bodies of water easily comparable in their artistic atmosphere with the natural beauties of Chautauqua and the canals which they feed afford many charming vistas peculiarly Ohioan. Beneath the surface Nature has exhibited

her fantastic mood in our caves and caverns of lime-stone, strontium and crystal. No region of definite name and physical outline gushes forth more springs of pure and medicinal waters. We have our cliffs and ravines laved by streams both placid and turbulent. We have our unique physical monuments of prehistoric times in landscapes dotted with the earthworks of the Indian and the mound-builder. And through all these endless varying pictures of eternal handiwork we have the atmosphere of our own civilization, bequeathed to us by the original possessors of the soil and the hardy Ohio pioneer, as distinct and characteristic as the landscapes of New England or

of transportation complete. a railroad also happens to creep into the picture.

Artistic photography meets an exceptionally fine subject in the justly celebrated "Half Moon Bend on the Ohio River" at Steubenville. Local coloring is given by the log and coal rafts in the stream, and by the characteristic type of an Ohio River steamboat.

For placid contentment and "the simple life" commend us to the happy condition of the bovine species exhibited in the charming view of the Sandusky river near Bucyrus, here as artistically reproduced. It is a charming Buckeye picture.

The picturesque last survivor of the old covered bridges that once spanned



RIVER AT STEUBENVILLE.

Photo by Filson & Son.

Colorado.

And yet Mr. Carnegie "thought Ohio flat!"

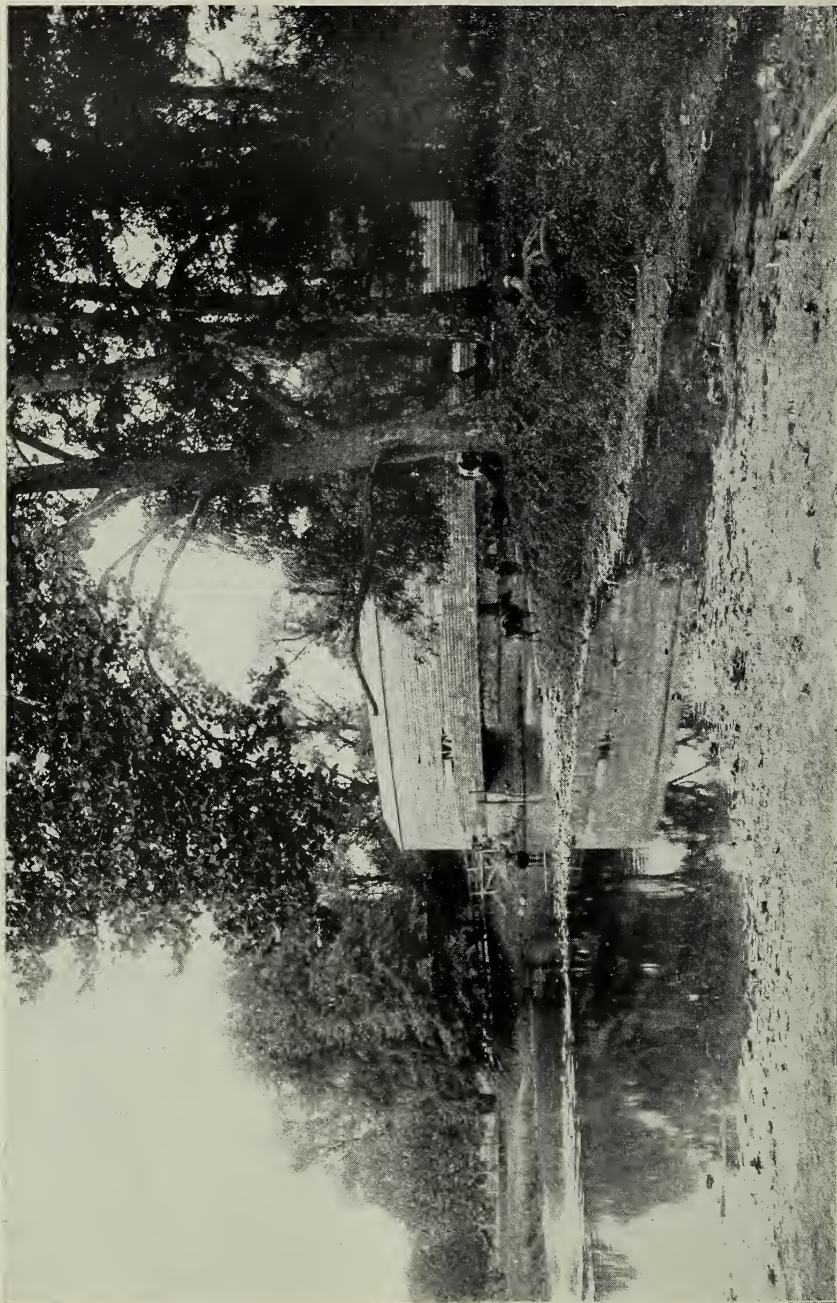
The camera proves quite the contrary, as will be herewith exhibited in due time.

It would be difficult to find a more unique view of water courses than the photograph of a Coshocton county scene picturing in one group aqueduct and basins, the Waldhoning river and Waldhoning canal. To make the story

the streams of Champaign county is depicted in an artistic view of Mad River. It is typical of the early days in many parts of the state.

The victorious contests which through many centuries the water-courses of Ohio have had with the solid limestone formation is well shown in the accompanying view of Little Beaver Creek near East Liverpool.

And so the story goes.



THE LAST COVERED BRIDGE IN CHAMPAIGN COUNTY. Photo by H. B. Conyers, Urbana.



LITTLE BEAVER CREEK, NEAR EAST LIVERPOOL. Photo by Spencer Studie.



ON THE OHIO AT POMEROY.

The Orchard Site

PERRY VAN EWING
Of Kansas State Agricultural College

THE proper selection of the orchard site constitutes the most important factor connected with the planting of an orchard. Bad orchard sites are the most frequent causes of failure in fruit growing. In speaking of proper sites, we have reference not so much to the geographical location, but more to the topographical. By this we mean the specified location as to the part of the farm, whether it be hill top, hill side, or valley, as the case may be. Not all neighborhoods furnish good orchard sites. Some furnish none, while others, such as our rare fruit sections, have conditions such that practically all of the land is well adapted to orcharding. Thus we have some sections where no fruit is grown, and others where fruit growing has largely replaced general farming as being the most profitable. Lands which are of a swampy nature and level offer no inducements for the planting of an orchard, and here it is a waste of time to plant trees. The greater portion of the country contains some land suitable for orchard planting, and portions that are unsuitable and here is where knowledge is necessary in order to select an orchard site.

The kind of soil is not of so much importance as is commonly supposed. The character of the sub-soil is of much more importance than the character of the surface soil. The richness of the soil is another factor which is not of such vital importance, for we find profitable orchards on dense clay soil, loam soils, light sands, and even on rocky soils. Above all the nature of the subsoil is of most importance. This should be of an open porous character. Commonly, the character of the soil

from one to 8 feet below the surface determines the adaptability of the land for tree growth. If the soil is suitable for even a depth of five feet this is usually satisfactory, although a greater depth is desirable.

Outside of actually growing the trees on a soil there is only one good method for determining its adaptability. This is by sampling the sub-soil, which may be done in several ways. One of the best methods and the most practical is by the use of the spade. The number of holes necessary to give the desired information will vary with the circumstances. Ordinarily a hole to the acre will be sufficient. It may take more or less.

Another much easier method is by the use of the ground auger, which is only possible in soils free from rocks. A home made auger is sometimes used for this purpose and can be made from an old inch and a half or a two inch wood auger onto which a five or six foot length of three-quarter-inch pipe is welded. A handle may be provided by attaching a "T" coupling through which is passed another pipe about two feet in length.

In planning an orchard, we should seek the establishment of a deep feeding root system which can only be obtained in an open, porous sub-soil. Trees with deep root systems have a greater feeding area and are not nearly so subject to the vicissitudes of drouth. There is a popular fallacy that the root system of a plant bears depth relationships proportionate to the parts above ground. The roots of certain legumes go to much greater depths than do tree roots. The ability of a

plant's roots to penetrate the soil depend almost totally upon the character of the soil and not on the boring power of the root tip. It is the lack of air which largely limits the downward growth of tree roots, which in time is the cause of the common failure of trees to grow in lands where the water table is near the surface. Thus, in order to provide a deep rooting system it will be necessary to have the sub-soil properly drained, either naturally or artificially.

In the selection of fruit lands, we must not forget that different kinds of fruits and even different varieties show variation in their demands for soil conditions. Only the best drained and deep light soils are suitable for peach orchards. Plums are not quite so particular as to soil requirements. Apples come next in order and then pears, which can be raised on soils on which other fruits will not grow. Cherries probably have more variation in the nature of the sub-soil required than do any other fruit.

Next, we must determine the nature of the air drainage, for this plays a very important part in orchard site selection in some parts. This is especially true if peaches are to be grown, on account of their low frost resisting nature. The mainpoint to be remembered is that cold air, being heavier than warm air, seeks lower levels. The frost line is frequently very marked on hillside orchards, where below a certain line the fruit has all been killed by late spring frosts. It seems as though a slight difference in altitude is a very great factor in determining the success of an orchard.

In communities where late spring frosts are common there is a tendency for beginners to want to make plant-

ing on southern slopes. They should be planted on northern slopes in this case. This would retard blossoming until the danger from late spring frosts were past.

Other facts connected with the planting of the orchard will be influenced by the use for which it is intended. If for home use, care should be taken that the trees are located at a convenient distance from the house. This is very important, and no farm home is complete without an abundance of fruit near the house.

From the commercial standpoint, there is no type of agriculture so remunerative as orchards, when properly managed. Some would say that there is no type of farming which offers such a great opportunity for the application of scientific methods. The income from a properly managed orchard is sometimes almost unbelievable. The average income per acre for orchards is very low because of poor management. The predictions of orchard promoting companies as to future crops and profits are generally possible but seldom probable.

From the home standpoint the planting of fruit trees is also quite profitable. No farmer can afford to be without fruits of the common sorts. We do not find one farm in ten that is properly supplied with fruits, and no farm is complete without them. This is especially true in districts where tenant farming is practiced. In the future more and more orchards will be planted, and more attention will be given to their care and management than there has been in the past. People are beginning to realize that orchards respond more readily and liberally in proportion to the amount of care given them than do most other farm crops.

Outdoor Storage Cellars Cheap and Useful in Both Summer and Winter

ON every farm in any locality there is need of a good outside cellar. In cold climates they afford the best and cheapest winter storage for fruit, vegetables, and bees. They are just as valuable in summer for keeping berries, milk and butter. In the Southwest such cellars offer the only means of safety during cyclones. Because they can do all the work themselves, farmers

thickness of 4 inches of concrete back of the steps proper. Arrange for an 18-inch landing at the bottom of the stair.

Make the sidewall forms of 1-inch siding on 2 by 4-inch uprights spaced 2 feet. As the concrete floor will be 4 inches thick, set up the forms on 4-inch concrete bricks. Above ground level use outside forms similar to the inside.



DURABLE AND ECONOMICAL.

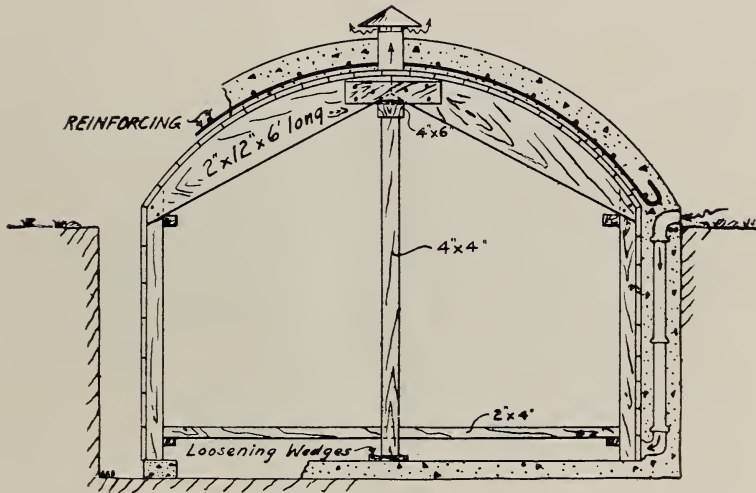
everywhere are building their cellars of concrete.

The most popular size for the average farm is a cellar 10 by 14 feet, inside measurements, with a self-supporting arched roof 5 feet above floor at the sides and 7 feet 8 inches in the center. All of the side walls are 8 inches thick, therefore dig the hole 11 feet 4 inches by 15 feet 4 inches and the depth desired, usually 5 feet. At one end cut out the earth to a width of 4 feet 4 inches and slope it upward for seven concrete steps with a rise of 8 inches and a tread of 10 inches and for a

To curve the end wall forms, lay them out with a 6-foot string in the same way as described below for arch rings. At the entrance end, to provide for a doorway, set between the forms a frame of 2 by 8-inch stuff 3 by 7 feet in the clear. Mix the concrete 1 part Portland cement to 4 parts bank-run gravel, or 1 part cement to 2 parts sand to 4 parts crushed rock. A sack of cement equals 1 cubic foot. With the forms in place, lay the 4-inch floor the same as a sidewalk, but without joints. Fill the wall forms in 8-inch layers with mushy wet concrete, and 6 inches from the top

of the side walls and 1 inch from the outside, place two $\frac{3}{8}$ -inch steel rods the full length of the cellar. In the concrete two inches above the door-frame, lay three four-foot lengths of $\frac{3}{8}$ -inch rods. Roughen the top of the walls so as to insure a good bond with the roof. Build the stairway with a $\frac{1}{4}$ -inch thickness of concrete behind the steps proper. Each step has a tread of 10 inches and a rise of 8 inches. The side-walls of the cellar hatchway extend above the door opening of the cellar proper, so that outside sloping doors may be added. In the top of the hatch-

circle. Across the circle lay a board exactly 10 feet long so that its ends just touch the mark. The part of the circle above the board represents the arched inside of the roof. Place boards for the arch rings over the mark on the floor and nail them together. Mark the curve upon them and cut them to the mark. Brace the arch well as shown in the drawing. Spacing the rings two feet apart, six will be needed. Fasten them securely in place to 2 by 6-inch liners spiked to the sidewall forms. Cover the rings tightly with 1-inch sheathing.



SHOWING STRUCTURE OF END.

way walls, while the concrete is soft, bolts are set heads down for holding the wooden sill, to which the strap hinges are later attached.

The Self-Supporting Roof.

When the sidewalls are one week old, begin on the roof. To give the roof a rise of 2 feet 8 inches, arch rings are needed. For laying out the rings, choose a floor or a bit of level ground. To one end of a strong string fasten a pencil and tie the other end to a nail driven firmly in the floor with exactly 5 feet 11 inches of string between the pencil point and nail. Mark out half a

With the roof form ready, place the reinforcement upon it. Use $\frac{3}{8}$ -inch rods 14 feet long. Space them 6 inches apart crosswise and 12 inches the long way of the cellar. Wire the rods together where they cross. The roof must be 5 inches thick. Carefully work exactly 1 inch of concrete between the rods and the sheathing. Tamp the concrete until the liquid cement flushes to the top and then finish the surface smooth by means of a wooden float and steel trowel. Do not stop for anything until the roof is finished. In two or three weeks the concrete roof will be strong

enough to support itself; then the forms may be removed.

Ventilation is necessary for most cellars. While building the wall make one or more air-shafts (similar to a chimney-flue) of 3-inch tile, by imbedding them in the concrete wall, with an opening inside at floor level and another outside well above the ground line. By this arrangement fresh air is admitted. Place a tile chimney in the concrete roof and cover it with a galvanized iron hood for removing the foul air. If built late in the fall, protect the fresh concrete from freezing by covering it with clean straw or with old carpet so suspended as to leave a dead air-space between the concrete and the covering.

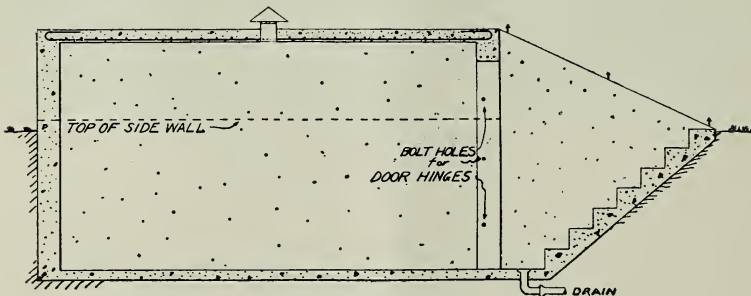
Below is given a list of the materials

required. The prices are higher than in most localities. If good screened pit gravel is used, no sand will be needed.

Bill of Materials.*

Crushed rock, 13 cubic yards at	
\$1.10	\$14 30
Sand, $6\frac{1}{2}$ cubic yards at \$1.00...	6 50
Portland cement, 22 barrels at	
\$2.50	55 00
Rods, 40 pieces, $\frac{3}{8}$ in. by 14 feet,	
206 lbs. at $2\frac{1}{4}$ cents.....	4 65
Total	\$80 45

The cellar shown in the photograph is 18 by 18 feet by 8 feet deep. It is located on an apple farm. The owner finds it a profitable investment as he has his own storage and keeps his apples until the market is no longer glutted with "wind-falls" and "seconds."



SIDE ELEVATION.

Producing Tomato Seed

GEO. B. CRANE

“GRANDMOTHER, how would you get along without tomatoes in your garden?” I asked her one day late in the summer while she stood near the stove, happily engaged in stirring her kettles of catsup.

“I do not believe we could do without this wonderful vegetable at all now,” she answered, “but do you know that when I was a little girl tomatoes were considered poisonous. Many times I saw them growing in flower beds and was cautioned not to eat them.”

think of where the small nursery plants came from in the first place. Naturally they came from tomato seed.

Because of this ever-increasing demand for seed, from which to grow the plants, there has arisen an industry on a large seed farm, located just across the river from the University Farm, that rivals any in the United States in size and adaptability to purpose. This farm turns out tomato seed by the ton, and to speak of seed in those terms shows that they make it a specialty.



DELICIOUS AND NOT “POISONOUS.”

But it is not so to-day. Next to the potato, the tomato has become the most universal of the staple vegetables. Very seldom, on the farm, and almost as seldom in the city, do we find a household that does not raise enough tomatoes for the family use. A man will often neglect any other part of his garden, but he must have tomatoes, and as a food they resemble bread in their universal use.

Most people who raise tomatoes buy young plants and set them out. In cases of this kind one seldom stops to

The process of separating out the seed is simple. The tomatoes are dumped into a moving carrier, and while they are passing on this to the elevator, they are picked over by five men, who allow only the choicest to go through. When elevated to the second floor, the sorted tomatoes are washed, pass into a grinder, and then over a sieve, where the seed falls below and is carried through pipes back down to the first floor into a large tank. The remainder goes from the sieve into another machine, where the meat is sep-

arated from the skin. The meat is then conducted to large cooking vats where it is cooked, put into five-gallon cans and shipped to catsup factories. The skins and refuse are hauled on the farm for fertilizer.

The seed in the large tanks, which is mixed with considerable juice when drawn from the grinder, is allowed to ferment until it reaches a certain stage. When this point is reached it is drawn off from below and washed. The process of washing cleans the seed and separates the light seed from the viable. When washed the seed is placed on drying shelves, where they are dried by means of a nine-foot fan. After drying they are placed in two-bushel bags, tagged with the name of the variety, and shipped to the warehouse in the city, where they are packed in amounts convenient to the trade. A bushel of seed when dry weighs twenty pounds.

During the season of about nine weeks' duration between 300 and 400 acres of tomatoes are handled by this plant. These are supplied partly from land owned by the plant, but mainly by the surrounding farmers. The seed company contracts for so many acres from each farmer, furnishes the seed, and inspects the crop for foreign varieties, since only one variety can be grown by one man.

In a favorable season seven tons to the acre can be raised. The company pays from eight to ten dollars a ton.

The care required for an acre of tomatoes does not exceed the labor needed on a like amount of corn, when the grower understands his business.

The seed sells for from three to five dollars a pound, when sold in this way. The demand for it by the pound originates from large garden concerns and canning factories who put out many tomatoes. When sold in ten-cent packets the return would be greater. From ten to twelve tons of seed are put out every year by this particular company. It is shipped to all known parts of the world where tomatoes are grown. Ohio uses a larger per cent of this output than any other one state. Florida is demanding seed now to grow their great crop, part of which comes to this city during the late winter. The vastness of this industry can be seen when it is figured that ten tons sold for five dollars a pound will bring a return of \$100,000.

Between thirty and forty men are required to handle the crop during the season. From 60,000 to 80,000 gallons of water are required every day to wash the seed and clean the machinery. The latter must be given careful attention to prevent the mixing of varieties. Crates from which the tomatoes have been taken must be scalded before being used again for fear of mixing.

Standard varieties which find ready sale in the markets are American, Beauty, Favorite, Stone, Globe, and Paragon.

Nothing is rich but the inexhaustible
wealth of Nature,
She shows us only surfaces, but she is
million fathoms deep.

—Emerson.

Judging Contest at Ohio State Fair

JAMES F. WALKER '14

ONE hundred dollars was offered by the Board of Agriculture for competition by students of the College of Agriculture in judging horses, cattle, sheep, and swine at the State Fair. The contest was carried on Tuesday of Fair week by the Animal Husbandry Department of the University. The stock judged consisted of rings or parts of rings exhibited for official awards, and the reports made out by the contestants were graded on the basis of their agreement with the decision of the awarding judge of the breed. The contestants passed on two rings of Percheron horses; one ring each of Hereford, Shorthorn, and Guernsey cattle; one ring each of Oxford and Lincoln sheep, and one ring each of Berkshire and Yorkshire hogs. No reasons had to be given for placement. The prize money was divided into four lots of \$25.00 for each group of live stock, and three prizes were awarded in each group, \$10.00 being first, \$8.00 being second, and \$7.00 third. The awards were as follows:

HORSES—E. O. Williams, first prize, with a score of 15 out of 20 points; E. A. King and C. M. Morris tied for second with 14 points each; and C. A. Gearhart, 13 points, for third.

CATTLE—W. S. Courtright first, with 26 out of 30 points; E. O. Williams

second, with 23 points, and J. F. Walker third, with 17 points.

SHEEP—C. A. Gearhart first with 14 out of 20 points; J. F. Walker second with 13 points; and W. S. Courtright, E. O. Williams, and E. A. King, 10 points each for third place.

HOGS—C. A. Gearhart first with 20 points out of possible 20; J. F. Walker and C. M. Morris tied for second place on 17 points; and E. A. King got third on 15 points.

Only eight persons competed, which was a mere handful as compared with the large number which usually participate. That so few should take part seems unaccountable, for the contest offers to the student of live stock an exceptional chance to study the very best. In addition to this, the pecuniary awards given the winners are certainly well worth while.

One would have thought that after the splendid trip given by the Ohio Electric to the twenty winners in the contest last year that more than ever would have sought to participate this year, but such was not the case. If the contest is to continue in future years it would seem almost imperative that it be supported by larger numbers and the students of Animal Husbandry are certainly standing in their own light by not supporting something that is gotten up for their special benefit.



Sketches of Indian Agriculture

W. BEMBOWER.

Mr. Bembower Has Charge of the Work in Horticulture in the Agricultural College at Allahabad, India

IN the far-off Orient, where the sun tarries while leaving the Western Hemisphere in darkness and where the stars shine while the Ohio farmer is at his labors, many strange things happen which a reader of *The Agricultural Student* thought might interest some Ohio friends. When one first sees the strange land and the curious customs of its people, the thought comes to mind that Columbus surely must not have known much about real East Indians or he would never have mistaken the native American for an Indian.

The first month's experience in this country to me was more like a dream than a reality and possibly this is the case with some of the "round the world" tourists who seldom spend more than a month in the country—taking a more or less direct route across the central portion of the country from Bombay to Calcutta, with a trip to Columba and one from Calcutta to the foothills of the Himalayas. In this sort of a journey one will see a great variety of peoples, come in contact with no less than a dozen different languages and see a multitude of curious customs, many of which are necessarily agricultural owing to the fact that over eighty per cent of the 315,000,000 inhabitants of India are agricultural.

Palm trees and mangoes are two of the vast variety of plants which adorn the landscape. Mangoes have been planted extensively along government improved roads and indeed serve a dual purpose to the poverty-stricken multitudes of the land. Many look forward to the mango season in summer with anticipation and remember it with

satisfaction. The mango is, indeed, the king of tropical fruits as the apple is king of the temperate countries, the best varieties being a most luscious food. Our own government considers it such a good fruit that it has appropriated considerable money for the introduction and study of the proper culture of the better varieties in those portions of the United States where it will thrive.

The methods of agriculture in this land are indeed primitive, having been handed down for generations along with religious superstitions and other things which hinder progress. The old wooden plow drawn by the ox team, the sickle and all the other primitive agricultural implements may be seen in daily use almost to the exclusion of all other kinds.

The system of renting land isn't at all encouraging to most of the farming class. One man is rarely allowed to occupy the same land more than one or two years in succession. Each year the land around the little village where all the people live closely together is allotted to a different person, who must pay a large share of the profits to the land-holder. Tools, cattle, etc., are housed with the family, and here we have one of the objections to the iron plow, in that it cannot be easily carried home at night to prevent dishonest neighbors from stealing it.

Since this trip will usually be taken by the average tourist in the winter season, the most delightful time, mention will be made of the crops which will be flourishing at this time. During the rains in late summer various crops are planted, depending on the locality.

In winter, wheat, linseed, dahl, gram, barley, rice, etc., may be seen flourishing, often several crops in the same field at the same time. Since little rain falls between September and June, irrigation must be carried on for certain crops and a large amount of terracing has been done to retain the water when it comes, in order that it will penetrate the soil.

In the vicinity of Darjieling one passes through the extensive area which is covered by tea plantations. In winter, little is taking place on this vast tract of land which extends from Eastern India across China, the season for gathering tea leaves being from March to October. The tea plant lives about one hundred years and the various methods of culture are constantly being experimented with by planters in the keen competition which takes place among the various districts which have suitable conditions for the growth of this crop.

The coffee industry of South India received a severe blow a few years ago through a blight which destroyed vast areas of this crop and reduced many wealthy planters to poverty.

The sugar industry of India is also at present in a critical condition owing to a lack of proper scientific knowledge on the part of cultivators.

Turning now to the foundation of agriculture, the question of soil fertility, we have a serious problem in India. Land which has been cropped for centuries during practically three-fourths of each year, will naturally be in a curious state of productivity if no form of fertility is supplied. This being the case, with a considerable portion of this country where a times of famine is unable to support its masses, it surely is time for the Indian agriculturist to awake. Instead of burning his good

fertility and then neglecting to even replace the ashes containing many of the mineral elements which the plant craves, he should busy himself with growing some quick-growing tree for fuel and put the fertilizer from the "sacred" animal onto the land where it belongs, grow legumes to supply nitrogen and practice proper rotation of crops and methods of cultivation.

Then as to Animal Husbandry, it is practically a neglected industry. The average Indian cow gives less than fifteen pounds of milk per day and, since no difference is made between breeding the draft bullocks and dairy cows, you can see that the result is an unsatisfactory bullock and an unproductive cow, or again, a wedge-shaped bullock and a cow with a well-developed protuberance on the shoulder for supporting the ox yoke. Cow-buffaloes and goats are also a common source of the milk supply, and to see how the goats are led about by the ear, or to see them perched up on some narrow wall alongside of an old mud house is, indeed a picturesque view, to say the least. Fences being the exception rather than the rule, cattle in pasture are constantly watched by some poorly paid individual of the lowest caste.

Horticulture is also a neglected industry in most cases, but as one sees the possibilities and results accomplished where a reasonable amount of care is bestowed, there is no doubt that scientific methods would double the profits of the cultivator. The three months of intense heat in summer are not favorable for northern things, but who cares, for then is the season of the luscious mango. The catalog of the tropical fruits would of itself occupy more space than the editor cares to give, so I will only mention a few, namely: Guavas, sugar apple, custard apple, pomegra-

nite, Japanya, all the citrus family, banana, etc., not forgetting the mango mentioned previously.

The richness of the country, the comparative few wants of the people other than food and a little money to bestow on their false gods, are undoubtedly the reasons for this lack of development of its various agricultural resources. However, trained men who have attended one of the five Government schools in which agriculture is taught in this country, nearly half the size of the United States, are all finding employment of various kinds and are in demand for various positions as managers

of estates or various government investigations.

Of course, there are some up-to-date methods being introduced into the country along with various English and American machines, but the above is the condition of the masses. The caste system, with its extreme division of labor, might mean much greater perfection in all the branches of agriculture if people could choose their occupation rather than be forced into it by ages of heredity.

Yes, the "Wandering Alumnus" is finding a busy, interesting life in the far-off Orient.



AN OLD-FASHIONED GARDEN.

Situated on the outer rim of what might still be called the heart of Chicago stands the group of rather recently built but extensively weathered, stone buildings composing Chicago University. On every side but one, the buildings are surrounded by apartment houses and apartment hotels standing so close together as to form an almost continuous front. Back yards and front yards are alike discarded in most instances and usually the only vestige of verdure remaining is that to be found in the artificial window gardens and the trees of the boulevard. Artificiality is at its height. Nothing is natural, nor even suggests nature, unless one strolls the park and lake front not so far distant.

Wandering one autumn afternoon from the glaring pavements into the cool halls of the University buildings, I came at last to a doorway opening abruptly upon a view so incongruous, so seemingly out of place, and yet so pleasing and so welcome that I immediately accepted things as they were and proceeded to form a closer acquaintance.

It was an old-fashioned garden, partly sunken, partly walled, and partly imitating the hillsides. At this particular season it was a riot of colors. Over there against the farthest, gray enclosing wall stood the plume-like golden rod nodding and waving in shimmering yellow profusion. Forming a partial background and canopy to the right were the tree of paradise and the castor bean. Half way down toward the little pond which reposed in the foreground grew the variegated zinnias and the blood red cock's combs, standing up straight and stiff and refusing even to bend to the breeze. Great clumps of "nigger-heads" and cosmos

over to the left made one riotous mass of black and orange and pink. Down nearer the water edge a wide variety of plants found a suitable habitat. Daisies and dog fennel crowded one another, purple asters and blue gentian overgrew the humbler mosses and ferns, and even the pig weeds, wild lettuce, rag weed and sour dock found a place because of their peculiar forms or their colored foliage. Crowded right into the water's edge were the sedges and striped water grasses and farther out grew the cat-tails with their brown heads (or tails) almost ready to burst open and scatter seeds.

Near the lower end of the little pond stood a clump of rank-growing iron weeds and horse weeds, the latter almost fifteen feet high. Beneath their towering height and close to the water's edge I found a few sprays of the old-fashioned yellow snap-dragon. I could not repress the inclination to pull off a few of these curious flowers and press their jaws together to see them open their funny dragon-like mouths in an all-devouring fashion. I thought of the little creek flowing through the pasture field on the old farm, back home, where as a child I gathered snap-dragons and experimented with their jaws and marveled at their life-like response to pressure. I thought also of the wonderful stories and adventures of King Arthur and his dragons that I used to weave about these innocent and perhaps unfortunate flowers which hold out such enticing enducements to be plucked.

The entire garden was calculated to recall memories of the old farmstead home, and in view of the joy and pleasure this little visit had brought to myself, I wondered how many people of the great metropolis knew of the existence of this beauty spot so near at hand.



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COLUMBUS, OHIO, OCTOBER, 1912.

Editorial

Have you noticed them yet? Those intermingling patches of purple and gold which so profusely splash the rural landscape in every direction at this season of the year, and

GOLDENROD AND ASTERS.

which illustrate, once again, the exquisite taste with which Nature selects her colors. Decorations of royalty are these and Autumn's Queen wears them with grace and comeliness. Everywhere they seem to fit in and blend in complete harmony with Nature's scheme of things—the browning fields, the yellowing trees, the shocks of corn, the ripened pumpkins, the silvery frost of the autumnal morn, the blazing noon-day sun—all proclaim a distinct change, a revolution in the seemingly established climatic order.

So well recognized are the goldenrod and asters as harbingers of winter and a distinguishing feature of the autumnal,

rural landscape, that we find frequent mention of them in the lines of our Nature poets. Thus Bryant says:

“But on the hills the golden-rod, and
the aster in the wood,
And the yellow sun-flower by the brook,
in Autumn's beauty stood.”

Elsewhere among these pages you will find an account of the students' judging contest held at the Ohio State Fair. This event has been carried out annually for several years and is a type of student activity which should enlist the heartiest co-operation of all our men who are in any degree interested in live stock. The opportunity presented at the fair grounds to examine some of the best stock in the ring and to match or compare one's judgment with that of experts, is one that no student of Animal Husbandry can afford to overlook. En-

THE JUDGING CONTEST.

tirely aside from the educational value, it would seem that the excellent cash prizes and splendid tour over the Ohio Electric lines in President Schoepf's private car would be sufficient inducement to insure a large number of contestants.

Whatever the reason, the fact remains that scarcely more than a dozen contestants competed this fall. Let's have fifty next September. You Sophomores and Freshmen, why not get busy and go out after some of that prize money and that most enjoyable trip? If you enter you are practically assured of the latter and the experience will certainly be worth many times the cost to you. Keep this in mind and GET READY.

The middle of November is rapidly approaching—likewise the International Live Stock Exposition at Chicago. Numerous men are taking extended trips over the state at their own expense in order to qualify for the judging team. Five of these men must then pay their own expenses to Chicago to represent the Ohio Agricultural College and whatever glory or renown they may win there will reflect back to the honor and credit of Ohio State. When the football team, or even the band goes to Michigan, their expenses are paid from beginning to end. When the debating teams go to Indiana and Illinois, no individual is expected to stand his own expenses. The total expenses incident to preparation and the final contest at Chicago often mount up in excess of one hundred dollars. Can the Agricultural College with its thousand members consistently do less than to contribute the one hundred and seventy-five dollars required for railroad fare

and hotel expenses for the two teams? Seventeen and one-half cents apiece will do it. Are you willing to give your share? A plan is being formulated and you will no doubt soon be given the opportunity to contribute. Don't falter. Drop in your quarter to make up for some other man's deficiencies.

The Winter Course of the Agricultural College opens in January as usual.

It is not a day too early to commence working upon the young men and the older men back at home, urging them to arrange affairs so that they can be present when the course opens.

The testimony of the men who have attended, the enthusiasm displayed while here, and the practical results which they have since been able to obtain, upon their own farms, all point to one conclusion, namely, that the Winter Course is a most excellent institution from every viewpoint and is a source of inspiration and material aid to those whom circumstances have prevented from attending a regular course. As such, it merits all that we can do toward the end of securing larger attendance. The large class of last year could be doubled in size this year if we but spread the news and lend a hand.

We wish to impress upon the students of the Agricultural College in every way possible the fact that The Agricultural Student is YOUR paper. We, whose names have been placed upon the editorial page by the accidents of Fortune, are only the mouthpiece, the indicator which registers the desires and wants and enthusiasm and, let us add, the support of the thousand or more students now reg-

istered in our College. We have an editorial policy and a general style of make-up which we will maintain at all hazards, it is true, but we desire the most hearty co-operation on the part of the student body. Drop in at the offices in the Ohio Union building. Less than one-tenth of the men have been here as yet. Don't delay longer. Come in and get acquainted. Bring along with you an article or a news item or perchance a subscription. If you have editorial aspirations, tell us about them. We are always in need of good men, both in the editorial department and on the business staff. If you are the man suited to the position, it is to our mutual advantage to get together as soon as possible. We repeat, come in on Saturdays or Monday evenings, you will usually find the offices open at that time and someone ready to receive you.

Go to one of our largest cities. Live there a few days. Get thoroughly covered with a good liberal coating of that grime and dust and **THE CITY.** dirt which soap will not remove. Roast awhile between the glaring sidewalks and the perpendicular brick walls. Get your lungs filled with smoke and your eyes filled with cinders. Experience the delightful sensation of constantly handing out good hard coin for every move you make. Be crowded and hustled and banged and bumped about until your remotest desire in that respect is fulfilled.

Then come back again to your vine-covered, arbored home in the small town, the village, or the free, open country. Expand your chest and draw in great lungfuls of pure, invigorating ozone and thank God that you are permitted to enjoy the beauties of Nature far from the strife and turmoil. It will

make you feel richer and more contented. It will cause you to appreciate more the advantages which you enjoy. And finally it will engender within you a greater understanding of and sympathy for the forced toilers in artificial, man-made cities.

Shake hands, Mr. Freshman, Mr. Mr. Sophomore, or perchance Mr. Junior. How are you to-day? How do you feel? Discouraged? Well now, cheer up! Cheer up! What if you did

SUNSHINE AND SHADOWS. fail in that quiz the other day? Suppose you do have to stay up until twelve o'clock at night in order to prepare the next day's lessons? No doubt you are forced to forego many pleasures to which you were formerly accustomed. But what of that? Didn't you come here with the avowed intention of working, and working hard? Hadn't you anticipated a struggle—and determined that it should be a winning struggle? It is merely aphoristic to state that one learns to do by doing, and that the most lasting benefit usually follows the most profound struggle. But such is the case and therein is contained a prophecy of the rosy future for him who labors conscientiously. So stay with it. Luck to you.

School duties are pressing and must be attended to first, without a doubt.

But busy, indeed, must **THE SOCIETIES.** be the student who feels that he can not spare the time to take part in at least some of the activities of the various agricultural societies to be found upon the campus.

The men who have spent several years at the college and who have been most active in these societies unite in

declaring that whatever time and effort it has cost them have been time and effort well spent. They believe that the acquaintances they have formed and the abilities they have acquired through these societies are worth working for—are worth planning and scheming and arranging of schedules and study hours in order to secure the requisite spare time in order to attend.

Usually it will not mean the re-arranging of study hours so much as it will of leisure hours. Cut out one hour's loafing after supper, concentrate upon the subject at hand, and you will finish in plenty of time to get over to the society meeting. It will do the society good and it will do the college good and, moreover, it will do you good.

Thank God every morning that
you have something to do.
Being forced to work, and do
your best, will breed in you
Temperance, Self-control, Diligence,
Strength of Will, Content and a hundred virtues which
the idle will never know.

—Kingsley.



ALUMNI WHAT THE BUSY GRADS ARE DOING

Berthold W. Anspen, B. Sc. '10, writes as follows: "Please note my change of address from the Mississippi Agricultural College to the Maryland Agricultural College, College Park, Maryland." Mr. Anspen is in charge of the Department of Floriculture and Landscape Gardening.

Miss Gladys Olson, Ag. '12, formerly of Sandusky, Ohio, has gone to Medford, Oregon, to reside.

George D. Makepeace, Ag. '82, is farming near Hilliards, O. Recently a daughter, **Miss Virginia**, Ag. '09, was married to **Chas. E. Snyder**, Ag. '09, assistant editor of the National Stockman and Farmer. They will reside at 519 Hastings St., East End, Pittsburgh, Pa.

William D. Benner, L. '99, is farming near Croton, Ohio.

Of the living alumni of the University, 27 report themselves as ministers; seven, three of whom are women, are missionaries; one grad is a foreign Y. M. C. A. Secretary; three former students are preachers and one a missionary; one foreign student is a foreign Secretary for Y. M. C. A. and one grad a National Secretary for Y. M. C. A., having charge of the Western County Work; one former student is a Jewish rabbi.

In Geauga County **S. E. Sweet** and **A. E. Case** are engaged in dairying and farming, respectively.

S. H. Shawhan, who graduated in '07, is now farming in Greene County. In 1908-09 he was Scientific Assistant in

the Division of Zoology, Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

Grace F. Smiley, '09, is instructor in Domestic Science at Fort Collins, Colo.

H. W. Coddington, '06-'07, is manager of "Maple Crest Farm" at Granger, O., and in a recent article in the Country Gentleman gives some very good advice about "Marketing Farm Products," along which line he is experimenting.

The marriage of **Miss Clara Orton Smith** to **Mr. Roland Weston Rodgers** took place Oct. 1st. They will be located at Pleasant Ridge, O.

Stephen Floyd Hastings, '05-'07, and **Mary Alta Stewart**, '07-'08, were married recently and will reside near Dunning, Neb.

R. R. Fry, '12, is operating the Maple Farm Co. lands near Dennison, Ohio.

Prof. W. R. Beattie, '07, formerly employed as Assistant Horticulturist at Washington, D. C., is now working as Agricultural Commissioner of the St. Louis Southwestern Railroad Co. The position left vacant by the resignation of Prof. Beattie is now occupied by H. C. Thompson.

L. L. Heller, '12, who until recently was manager of a large creamery in Washington, D. C., has resigned in order to accept an excellent position in the United States Bureau of Animal Industry. Mr. Heller will be particularly concerned with special sheep and goat investigations and enters the department as Junior Husbandman.

Earl P. Claypool, '08, who since his graduation has been teaching in the Philippine service, is now home on leave of absence until April, 1913. Mr. Claypool's home address while in the United States is Lancaster, Ohio.

Harry J. Camphee, '07, of Barnesville, was a visitor at the State Fair. He made it a point to come around to the Agricultural Student's booth and get acquainted and renew his subscription.

J. Byrl Crabbe, Ag. '03, formerly of Mt. Sterling, Ohio, writes to the Ohio State University Association that he is now at the head of the Science and Manual Training Department at Michigan City, North Dakota.

H. S. Warwick, Secretary of the Ohio State University Association, recently received a communication from **A. G. Abbott**, Ag. '99, who lives at Wadsworth, Ohio. Mr. Abbott is proprietor of Hedge Row Farm and is a grower of Shropshire sheep, Berkshire hogs, and Jersey cattle. Referring to the recent gathering of Ohio State men and women at his home, Mr. Abbott writes: "It was the eleventh annual reunion of the Western Reserve Ohio State University Association, composed of the alumni and former students of the College of Agriculture and Domestic Science, residing in Medina and adjoining counties. There were present about fifty members. The day was spent in visiting with each other and inspecting the farm, Jersey herd, cow stables, etc. After dinner the meeting was called to order by the President, **Mr. J. L. Jones**, who was at the University in 1898. The minutes of the last meeting were then read by **R. J. Palmer**, who was a student in 1898-99. No program had been prepared, but many responded to their names by short talks. The principal speaker was **Miss Harriet Mason**, of the Ohio Farmer. Before adjournment the

following officers were elected: For President, **J. E. Mackay**, and for Secretary-Treasurer, **C. M. Whipple**, of Medina, who was a short Ag. in 1896-97. It was voted to hold the next reunion at the Experiment Station at Wooster upon the 3rd of August, 1913. After that we sang college songs for an hour or more. The college yell also was given in good old-fashioned style. I was at the State Fair on the 28th, but did not reach the grounds until just after the Ohio State reunion had adjourned."

Donald Kirkpatrick, LL. B. '12, who received his B. A. from State in 1910, has entered into partnership with P. E. Yaybourn, a former foot-ball star, at Springfield, Ohio. During his senior year Kirk was manager of the Ohio Union and General Secretary of the University Y. M. C. A.

Charles N. Mooney, B. Sc. '00, attended the reunion of Ohio State agricultural men at the State Fair on August 28th and was greatly interested in the progress of the work among the Alumni and former students.

John F. Cunningham, B. Sc. '97, the managing editor of the Ohio Farmer and a member of the Board of Visitors of the Ohio State University, acted as chairman of the Ohio State reunion on the State Fair grounds.

H. P. Miller, D. V. M. '97, lecturer for the Ohio State Board of Agriculture, was in attendance at the meeting of Ohio State men at the State Fair. Also **F. W. Sweet**, '98, and **C. C. McCoy**, '88. Mr. Sweet is a buttermaker near Akron and Mr. McCoy a farmer and stockman at Washington C. H.

Arthur Brookley, '12, stopped over in Chicago for a short visit with Messrs. Guard and Hayes before going to Adrian, Minnesota, to take up his work of Director of Agriculture in the Agricultural High School at that place.

CURRENT AGRICULTURAL LITERATURE

COMMENTS AND CRITICISMS ON
CONTEMPORARY CONTRIBUTIONS

"Fertilizers and Crop" is the title of a volume of some 800 pages written by Prof. Van Slyke, Ph. D., Chemist of the New York Experiment Station. This book takes up the factors of fertility in the usual manner (giving more attention than have previous authors to bacterial relations and the uses of lime) and in addition discusses the particular problem encountered in growing each of the various classes of crops. The aim throughout is to make the scientific knowledge as practical and specific as possible without detracting from its value as scientific knowledge. Published by Orange Judd Company, New York.

The southern edition of the Orange Judd publications has been changed to a distinct farm paper for the South. It and the editorial officers are located at Atlanta, Georgia. Prof. Nevin, formerly of South Carolina Agricultural College, occupies the position of editor, but a large portion of the material will no doubt be issued by the Orange Judd Co. from their New York and Chicago offices, as is done at present for their other publications.

"Beginners' Guide to Fruit Growing," by F. A. Waugh, Orange Judd & Co., 1912, contains the elements of fruit growing under the topics of Propagation, Planting, Management, Pruning, Spraying, the Various Fruits, and Renovation. The book takes up subjects of common knowledge to the orchardist,

essential to the beginner, and yet those phases of the subject that have heretofore been gained largely through personal contact with the work. An exceedingly valuable guide for the beginner who intends to go into fruit growing as a profession.

W. J. Spellman, in Country Gentleman, Sept. 21, sets forth a plan to unite the state and national agencies for agricultural extension work. "The plan of organization for demonstration work in the Northern and Western States is as follows: The work in the state is to be placed on the hands of a state leader paid jointly by the office of Farm Management (Washington) and the State Agricultural College. The general character of the work to be done is determined in joint conference between a representative of the office of Farm Management and a representative of the State College of Agriculture." This leader, however, is to report and be under the direction of the State Superintendent of Extension.

In Breeders' Gazette for Aug. 28, "The Agricultural College Graduate" is discussed by S. R. Guard, '12. An appealing article on opportunities awaiting the insufficient numbers, along the lines of government work, teaching, in the commercial world, agricultural engineering, farm journalism, and lastly, farming itself. The writer shows the college to be a time-saver and "The

most efficient way to make an educated man." "Every day the graduate proves to the world that his Alma Mater gave him a dollar-and-cents farming education."

"What Ohio Is Doing for the Farmer," or "The Ohio State University," by C. A. Waugh, in the Ohio Farmer, Sept. 28, is the first of a series of three articles on Ohio's institutions: The Ohio State University, The Ohio Experiment Station, and The State Board of Agriculture. An interesting, non-technical description of the building, courses, expenses and instructors of the Agricultural College.

The second of the series of articles by Frederick Irving Anderson on "The Farmer of To-Morrow," now running in Everybody's Magazine, satisfies, in a measure, the expectations aroused by the preceding installment.

Mr. Anderson has the financial phase of farming operations in the Corn Belt sized up in a clear and definite manner and the series of articles merits close perusal by all students of Agriculture.

Concerning the dilemma presented to the farmer who is endeavoring to secure reasonable returns on the capital represented by lands which have experienced a rapid rise in value, he says:

"When a horse begins to eat its head off, there are two ways out of the difficulty: Either work the beast hard enough to earn its keep, or look around for a means of transportation with a more reasonable appetite. Land has the habit of eating its head off, too. It becomes greedy when it gets scarce, when it assumes value. It exacts interest—rent; and finally grows so greedy that there is nothing left for wages. Then is the time to apply horse medicine. Either work it hard enough to pay its keep (this costs time and money, just as full steam consumes more coal than half steam), or look around you for land that exacts less."

The various phases of financing and development, of intensive and capitalistic methods, and of changes and readjustments incident to the new order of agricultural affairs, are discussed at some length in the remaining pages of the September and October installments, which complete the article.

But the air's so appetizin'; and the
 landscape through the haze
 Of a crisp and sunny morning of the
 airly autumn days
 Is a pictur' that no painter has the col-
 orin' to mock—
 When the frost is on the punkin' and
 the fodder's in the shock.

—James Whitcomb Riley.

ANSWERED BY EXPERTS

Questions addressed to Dept. D, Agricultural Student, will be turned over to the particular faculty member most capable of answering, and question and answer will be printed in succeeding number of "The Agricultural Student". Questions will be answered by mail if stamped envelope is enclosed.

Home Mixing Fertilizers.

What are the arguments in favor of home mixing fertilizers?—H. T. B. Clinton Co.

When one buys a fertilizer already mixed he takes the risk of its containing some low grade materials. It is possible to use materials in a fertilizer mixture which would show the required amount of plant food on analysis but which would be of little value when applied because of their low availability. When a man buys fertilizer he has only the word of the man who sold it as to the form in which the materials are present. The fertilizer companies do not do the mixing for nothing, and it is usually customary to charge rather a high price for the work done. In many cases, however, the buyer who knows something about fertilizers can buy them already mixed cheaper than he can mix them himself and in the case of mixtures of phosphorus and potassium he can be sure as to their availability by looking up the official report as published by the State Board of Agriculture. The chief difficulty in buying ready mixed fertilizers lies in the uncertainty of the form in which the nitrogen is present and the price one is usually compelled to pay for it.

Vetch As a Cover Crop.

I am thinking of sowing vetch where oats and peas were this summer. It is gravelly bottom land with hard sub-

soil. I also want vetch or some other legume to follow a poor crop of corn. Have you any suggestions to make?—W. H. C. Fairfield Co.

Winter or hairy vetch is about the only cover crop that is available at this time of the year, although it is just a little late even for this crop. If used alone the vetch should be seeded at the rate of 75 pounds per acre. Some prefer to seed with rye, using one bushel of rye to about 50 pounds of vetch seed, mixing the two together and sowing with an ordinary wheat drill. If vetch is seeded before October 1, it will make considerable growth before severe winter weather sets in and its continued growth during warm periods should enable it to cover the ground pretty thoroughly before spring.

Second Growth of Oats.

I would like advice concerning a second growth of oats on a field that has just been put into alfalfa. Should the oats be cut before frost and allowed to lie on the alfalfa or should they be allowed to freeze?—C. H. Jackson Co.

The advisability of getting the second growth of oats on your alfalfa will depend upon the growth of the oats, the presence of weeds which are likely to go to seed and the general condition of the alfalfa seeding. If the oats are not more than six to eight inches high at this time, we would not clip the field unless for the purpose of getting

rid of weeds or strengthening the young alfalfa plants.

Rye as a Fertilizer.

Is rye sown in the fall and turned over in the spring of any value as a fertilizer?—R. H. A. Miami Co.

Rye plowed under will add organic matter to the soil but it does not add plant food other than to return that which it took from the soil during its growing period. The legumes, such as clovers, alfalfa, beans, peas, etc., are the only plants that add plant food to the soil, and they only add nitrogen. However, rye sown in the fall as a cover crop will utilize available plant food in the soil and prevent its being leached out by winter rains.

Why Some Hens Lay More Eggs.

What points should be noted in selecting hens for layers?—O. A. B. Perry Co.

While there are several factors that influence egg production, the relationship between the hen and her feed is the most important. Poultry raisers should study their hens and keep only the egg producers. Here are the points to consider:

In the market place, a laying hen should be healthy. One of the indications of health is activity in scratching and foraging. The weak fowl is rarely active and does not forage far from the poultry house. It remains on the perch after the others have gone in search of food and returns to roost early in the afternoon. The fowl that forages out in the fields is usually the one that is in search of egg-making material.

Another important factor is the shape of the body of the hen. A laying hen has a deep, broad body, indi-

cating abundant space for a large digestive and reproductive system. Unless the hen can consume and digest a large quantity of feed, she cannot produce a steady yield of eggs. The legs should be moderately short, sturdy and placed well apart. The neck should be short and thick; the breast round and full; and the keel well covered with meat. The tail should be carried erect, a characteristic more noticeable among the male birds than among the pullets or hens.

The head and its appendages are also an indication of health and vitality. The strong fowl will have a broad head with a short, well curved beak. The eye will be bright and full, the wattles and comb bright red and of medium size. A very large comb does not necessarily indicate the best state of health and it has the disadvantage that it is likely to be frozen in severe cold weather. However, avoid a hen with a shrunk comb, a long flat head and a correspondingly long beak. Such hens should never be used for breeding purposes and are rarely profitable layers. Beautiful plumage indicates health and is considered an asset in breeding. It should be smooth, fully developed, glossy and brilliantly colored. Dull plumage is an indication of weakness.

Lastly, a good hen has a keen appetite and will consume large quantities of food. This is essential if she is to produce eggs economically and maintain a healthy body. Unless the hen is capable of digesting and assimilating her food, thus keeping the body strong and healthy, it is useless to expect a profit in the production of eggs. Loss of appetite is regarded as a symptom of many common diseases and a hen that is suffering from disease is a total loss.

Secondary Agriculture

Devoted to the Interests of Agricultural Education in High and Common Schools

J. W. HENCEROTH

We are told that this is a "Practical Age." Nothing could be truer, yet there are certain other things that should not be neglected. It is well to connect "Gentility" with "Fertility." There are scores of poems and articles describing the autumn in all its glory, the ripening corn and the yellow goldenrod, the flight of birds, etc., that are dear to our hearts and which are very appropriate at this season of the year.

Connect the reading and the language lessons with the agriculture and see what an interest is aroused in the school work. Some frosty morning read Riley's "The Frost is on the Pumpkin," and note the electrical effect on the class.

Always find out what the children learned during the summer. They delight in telling about it. Have them write brief accounts of their gardens, the summer's work in general, of the day spent at the County Fair and what they saw there. In so doing you will stir up an interest in agriculture in the school work, and also help to solve the problem of keeping the boys on the farm.

Now is a good time to prepare for a winter exhibit or for the County Fair next summer. Select the best work of the school and preserve it so that it may be exhibited in an attractive manner.—Editor.

WHAT AND HOW TO TEACH.

It is very difficult to interest the boys and girls in something they know nothing about, therefore be sure to keep the work well connected. Teachers, plan your work and be sure you know what you are going to do. It is wasted effort to go from subject to subject without any system or idea of what you are going to do. Always correlate the school agriculture with the local conditions. If you are in a Horticultural region begin with the orchard and then gradually take up other phases of agriculture. If you are teaching in a town or city first treat the subject from the consumer's standpoint. Tell the children what to look for when they buy meat, butter, potatoes or apples and how to buy economically. Teach them how to care for the farm products after they buy them, for it is yet too true that much of the trouble with butter spoiling, potatoes rotting and bread molding is caused by lack of care on the part of the purchaser.

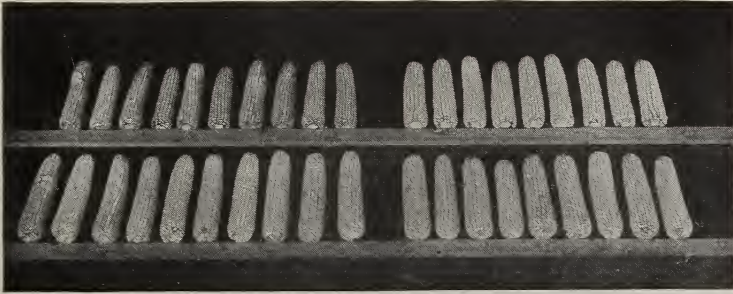
Teach some home sanitation along with the things suggested above. Show the pupils how to disinfect with crude carbolic acid and lime. This is especially valuable in small villages when the sewerage system is poor or lacking altogether. The writer has done this and was very much surprised by the way the children took it up. You can do much more with them than you can with the parents.

These are only a few suggestions for teaching in relation to the consumers' end of the business. After you have fully treated this phase of the subject then take up the farmers' side and teach something about the soil, how to select seed corn, how to make good butter and you will find added interest in the work.

Then came the autumn, all in yellow clad,
As though he joyed in his plentous store,
Laden with fruits that made him laugh,
full glad

That he had banished hunger, which
to-fore
Had by the belly oft him pinched sore;
Upon his head a wreath, that was en-rolled
With ears of corne of every sort, he bore,
And in his hand a sickle he did holde,
To reape the ripened fruit the which
the earth had yold,—Spenser.

Don't forget to send us questions to answer. We delight in answering questions dealing with any phase of agriculture and they will receive careful and prompt attention.



OUR BEST TEN-EAR SAMPLES OF CORN EXHIBITED BY THREE HIGH SCHOOLS AT THE STATE CORN SHOW.

Agricultural Exhibits at the County Fairs

FRANK T. McFARLAND, '12
Department of Botany, Kentucky State University

IT is only within the last few years that the Agricultural School exhibit has taken an important place among other exhibits at the county fair. I am compelled to admit that where we find these agricultural exhibits, we find a prosperous county with progressive and intelligent teachers.

As these exhibits belong to secondary agriculture, probably it may be allowable here to explain, what is meant by "secondary agriculture." At the present writing, it is very difficult to define in a given number of words just what this term means. Just what

should be included in the definition and what left out is mighty hard to decide. It does not include that which is taught in the grades or what may be termed "elemental" agriculture. Again, it is not that which is taught in our colleges. Collegiate agriculture as it is taught in the most of the colleges at the present time is very largely of secondary nature. The aim of the college should be that of investigational work and the study of the more deeply fundamental principles connected with agriculture.

Secondary Agriculture, then, can be seen to lie somewhere between these

two extremes. When we speak of secondary Agriculture being taught in the high school, agriculture is meant and not nature study. Nature study belongs to a category by itself.

Let us now turn our attention for a while, to what is being done at the county fairs in the way of school exhibits. At one county fair which I attended this fall, the exhibitors (pupils) were as much enthused over their displays as the race horse exhibitors were over their winnings. The exhibits showed great variety. The displays were made up wholly from the works of the pupils and included displays in

the economic value as dyes. Oak bark was labeled telling of its use in the tanning process for leather.

Collections of weed seeds constituted one of the most instructive as well as interesting displays. Small vials, tied on cardboard, were used for the seeds and above the bottle was a label bearing the common name. The seeds were thoroughly dry, and some of the pods were also found in the vials. The pods were a valuable addition because they served to show how the seeds were disseminated.

Plants were mounted on bristol paper, showing the entire plant as it



TEN BEST TEN-EAR SAMPLES OF CORN EXHIBITED BY THREE HIGH SCHOOLS AT THE STATE CORN SHOW.

wood, weed seeds, cereals, grasses, flowers, tree products, manufactured products and others too numerous to specify.

The various woods were represented by small cuts, cut lengthwise and crosswise so as to illustrate the grain and character of the wood in question. The chips of wood were sometimes arranged so as to give a rustic effect and other arrangements brought out the various characters of the different kinds. Various products of trees were exhibited. Maple sugar was labeled with a note telling of its manufacture. Gall nuts were abundant. Notes were found with these telling of

grew under natural conditions. Flowers of various plants were also mounted on paper and exhibited along with the plants.

Another most interesting exhibit was that of the insects. They were preserved in small vials filled with alcohol and all the various stages from the egg to the adult were shown. Injured plants were mounted and shown with these insects, showing why they are of economic importance. Notes were attached giving remedies for the combating of the insects.

Cereal plants and their products were exhibited in a great many ways. Ears of corn, of all varieties, heads of wheat,

as well as threshed wheat in glass cups, oats, and many of the new varieties of cereals were shown. Everything was arranged in all these displays so as to catch the eye of the judge because about 50 per cent. was given on the artistic effect and arrangement. The manufactured products consisted of wheat flour, bran, chops, graham flour, rye flour, buckwheat flour, corn meal and rice. These were in small glass jars and labeled.

The various textiles, cotton, hemp, flax, and wool, used in making cloth were well exhibited. One very interesting example of this was the manner in which a pupil wrote about these fibres. Cotton was the subject of one of these treatises. It was somewhat elaborate, the pamphlet had brown soft card-board covers, and on the front cover was painted a bursting ball of cotton with the white fibres hanging loosely from the opening. This was sufficient to tell us what was treated in the booklet. Again, another pamphlet, which struck me very forcibly was that on wool. On the front cover was painted the picture of a sheep grazing under a wide spreading oak. The pages were neat in appearance and the treatise nicely written in ink.

The exhibit of rocks and the various soils of the school district drew a good deal of attention. The identification of these rocks and soils would necessarily devolve upon the teacher, and the greater the efficiency of the teacher the better the display.

Apparatus of modern and up-to-date character was displayed—plates and boxes used for germination of corn and vegetable seeds.

A large part of the success of these displays will depend on the skill and interest of the teacher in charge. The more enthusiastic the teacher, the

greater and better the display. This is the sole reason for the good displays seen at the local fairs. This is the question for each teacher to ask himself: Is it worth my time? The answer should be, YES!

Principals, teachers and students, are urged to send in brief accounts of their school gardens and some of the things they did and learned the past summer. If the pupils did any special work at home or on the school grounds be sure to let us know about it in order that others may learn what you are doing. Due credit will be given all articles.

KEEPING A WEATHER RECORD.

Now is a good time to start a weather record. Allow each pupil to keep his own individual chart either as he chooses or according to some form prescribed by the teacher. It need not be complicated but just a brief statement of the weather from day to day is all that is necessary.

It is easier and better to keep this in an outline form. Rule the page so as to have six to eight columns, then beginning at the left write date, sun, wind, clouds, rain, snow and temperature at the head of the columns. Now it is a very easy matter to record the facts for each day. Should you wish to make a general statement about the weather, use two lines for each day, the first for the specific facts and the second for the general statement.

It is well to study the weather maps in the newspaper and keep tab on the accuracy of the predictions as given in the weather reports. It is very necessary that the farmers pay more attention to the weather reports than is usually done. The writer knows of entire crops of hay being saved during

the past rainy season simply by obeying the weather reports.

People in the same community, who laughed at the idea of mowing hay by the weather reports, lost tons of hay that might easily have been saved.

FIELD WORK.

The Agricultural Class should spend some of these glorious autumn days in the fields and woods studying the different kinds of soil, trees, birds, weeds and fall crops. Observe carefully the various changes taking place in nature as she prepares to put on her winter cloak. If the members of the class will keep a note book they will find it of interest as well as very profitable. If a short report of the trip, written in simple language, is required of each pupil, they will find it very valuable. In all this work the grade and ability of the pupil should be taken into consideration. The High School pupil should see more and give a better description of what he sees than the grade pupil does.

Make a list of the birds going south and of those preparing to spend the winter in the north. Study carefully the various plants, trees, and especially the weeds and be sure to make a collection of weeds, nuts, grain, grasses, etc., for future study. These delightful days are ideal for collecting specimens and preparing for the winter's work in agriculture. Always attach a tag to the different articles collected, stating clearly the time, place and conditions of gathering, for in this way only, is it possible to get the most good from the work.

Above everything else, don't forget

to visit some cornfields to study the ripening crop and the proper selection of the seed. In selecting the corn get that which is well matured, and that which grows on a good straight healthy stock standing up well. It is best to select an ear growing medium high in preference to one low or very high. Take the ear that is attached to the stalk with a shank just long enough to permit the ear to hang at a slight angle. If the ear stands up straight the water can easily run in and spoil the grain. If the corn is in hills and you can get good, firm, well-developed ears in hills having three stalks take them as they are apt to be the best for seeding purposes. Now store the corn in a dry place and later use it for germination tests. If there is no other place available hang it on strings from the ceiling or on the wall.

Now teachers, you don't have to do all this in one day. Much of it can be done on Saturdays, at noons, and on the way to and from school. However, the class should be taken on special trips, for in this way it is possible to learn real agriculture. You will learn more real agriculture in one afternoon in the fields than in two weeks spent studying from an agricultural text book. Don't get discouraged if a few old fogies criticise you. They have always done it and simply do it now from force of habit. They are from Missouri and after they are shown they will be your most ardent supporters. For after all the average farmer is pretty level headed and if you can convince him that what you are doing has some real merit in it his objections will turn to words of praise.

WITH THE BREEDER

NOTES OF INTEREST AMONG THE FLOCKS AND HERDS

Clyde Paul De Kol, No. 25131, the famous Holstein owned by Derrer Bros., of Camp Chase, died recently at the age of 16 years. Earlier in her career the horns of this noted animal were promised to Professor C. S. Plumb and the same will be mounted and presented to him in due time.

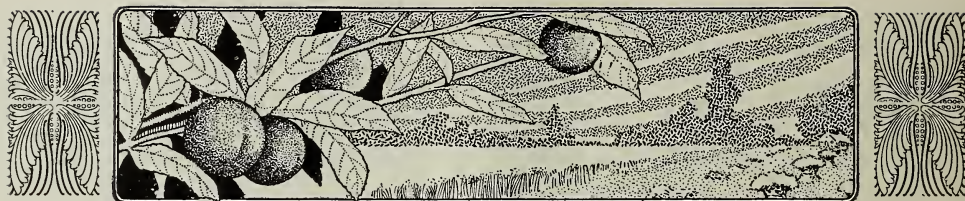
Clydesdale Enthusiasts: Mr. R. A. Fairbairn, of New Jersey, has recently imported from Scotland the Cawdor Cup champion mare of the present season, Harviestoun Baroness, and also on behalf of Mr. Schley, another New Jersey man, a well bred two-year-old colt, Scotland's Herald. The latter was sired by the Cawdor cup champion "Scotland Yet," out of the fine mare, Brenda of Sandilands, by the well-known stallion, Belted Knight. Another fact of interest in this connection is that Mr. Fairbairn is sending over to Scotland one of his mares bred by the late Col. Holloway to be bred to the renowned stallion, Baron's Pride. The latter is 22 years old, but is reported to still be remarkably fresh. This is the first case on record where a mare has been sent such a distance to be mated.

Mr. Winchet, of Dayton, who graduated in 1908, is now Secretary of the Ohio Hampshire Swine Breeders' Association. This association was organized in January, 1910, and has made rapid

growth since that time. Ohio now has more than one hundred and fifty Hampshire breeders, distributed over fifty-nine counties. The breed has its greatest stronghold in Delaware County, where nearly fifty Hampshire breeders are to be found. Charles E. Davis, of Radnor, is President of the Association.

White Lily, a two-year-old Ayrshire heifer, owned at South Farm, Willoughby, O., recently finished her year's test, having 12,023 lbs. of milk to her credit. As this is the greatest amount of milk ever produced by a two-year-old of any breed, it gives Ohio another world's champion cow. All eyes are on Ohio's dairy cows.

The estate of the late Frank W. Hart, at Painesville, Ohio, has become the property of Mr. Samuel Runner, a well-known Cleveland merchant. Mr. Runner is building up a splendid herd of Holstein-Friesians. The herd is headed by Hillside Pieterje, a bull of strong individuality and with the best of blood lines, being bred by Mr. Arfman, of Middletown, N. Y. The young stock have also been selected with much care and promise to add their full share to the growing popularity of the Holsteins in Ohio. Cherry Farm will be remembered as the home at one time of many noted Jersey cattle, developed under the able hand of Mr. E. L. Van Deusen.



October News Notes

OHIO STATE REUNION.

The reunion of agricultural students at the State Fair was a success in spite of the absence of the main speaker, Dr. Thompson, whose many duties prevented his attendance. About seventy-five men were present and displayed active interest in the purpose of the meeting which, as stated by the chairman, John F. Cunningham, was: "To present the needs of the Agricultural College and to urge upon the members of the next General Assembly of the State of Ohio the necessity of dealing more liberally with the College in the matter of appropriations."

Mr. Mowls, of Bayard, O., showed how grievously our appropriation and equipment had failed to keep pace with the registered number of students. He pointed out the fact that while our registration had increased nearly four hundred per cent in the last four years, the teaching staff and equipment had remained of practically the same size.

Mr. Mowls ended by drawing striking comparisons between the support given our own college and that accorded the agricultural colleges of nearby states—much to the disadvantage, it might be added, of Ohio State.

Mr. Detrick, of Bellefontaine, presented a resolution to the effect that a committee be appointed to meet the Legislature during the next session and present the views of the assembled alumni.

The following committeemen were

named: Howard Hagler, of Washington C. H.; C. N. Breese, Lima; W. A. Martin, Kenton; E. J. Kitchen, Springfield, and F. M. Lutz, of Norwalk.

Several other members spoke, urging upon each man the necessity of meeting his local representative and exacting some promise of support for the movement.

Altogether, much benefit was derived from the meeting and a similar reunion is being planned for next year.

During a trip in the East this summer Prof. Plumb selected three Ayrshire heifers from the herd of J. R. Valentine which he purchased for the University. Mr. Valentine is the owner of the Highland Farm at Bryn Mawr, Pa., and has one of the best herds in this country. The heifers purchased are two years old and represent modern style and type in Ayrshire blood. Their names are: Burn Boa (imported), bred by John Berwick, Burn Farm, Thornhill, Scotland; Tinkle Bell, bred by Mr. Valentine, and Colonel's Ithan, bred by the same person. Each one of these heifers has freshened since arriving at the University in August.

A second purchase of the Animal Husbandry Department is two Duroc Jersey barrows from James Kagay, of Pleasantville, O. One of these is expected to go with the two already owned by the University to make a pen of three for the International, thereby taking the place of a fine Duroc barrow which

was killed shortly before school opened. The two barrows purchased, together with the two already owned by the University, will make a pen of four to be used in the class-room.

A third purchase for the University has been a high grade Lincoln wether, bred and shown by J. G. Lethbridge & Son, Alliance, Ontario, Canada. He was first in class and champion over all breeds and grades at Ohio State Fair and was also first price and champion at the Michigan State Fair at Detroit.

Considerable favorable comment has been passed on the new University poultry plant which is nearing completion after two months' construction. The small barren field of last spring, located just across the Olentangy River, is now the thriving colony home of about 1,000 fowls. The plant consists of a brooder-house for the hatching, laying house for the egg-laying period, an institution building for poultry classes and numerous colony houses.

Dr. Issa Tannumura, Japanese live stock commissioner, who for the last twenty years has been commissioner for Japan to United States on various occasions, has recently conferred with Prof. C. S. Plumb relative to improving the sheep industry in Japan. Dr. Tannumura stated that at present there were but 4000 sheep in his country, but that they deemed it feasible to send him to the United States to study the industry in order that they might more sagaciously attack some of their problems along this line.

Work has been postponed on the proposed Botany and Zoology Building, which is to be built opposite Oxley Hall, because of an error in the appropriation bill passed by the last General Assem-

bly. The cost was to have been \$125,000. Those in charge do not anticipate any trouble in getting the appropriation from the next legislature.

Personal attachment and helpful guidance are given as the reasons for the adoption of a new advisory system in the College of Agriculture this year. Each of the twenty instructors has a list of some twenty freshmen students to assist. Any problems whatever, pertaining to school or otherwise, encountered by the beginners, are taken to their advisors, and there more easily solved.

Plans are again under way for the Second Ohio State Corn Show. This is a grain show held by the students and for the students under the supervision of the Agronomy Department. Further details will be given later, but the success of this venture depends on the students' booster spirit.

Prof. J. H. Gourley, of the Extension Department, has gone to New Hampshire to accept the position of head of the Horticultural Department of the New Hampshire State University.

Forestry men should attend the first meeting of the Forestry Society on October 14. At this meeting the organization will be perfected for the year.

Professor W. R. Lazenby attended the National Conservation Congress at Indianapolis the first week of October. Prof. Lazenby represented the State Department of Forestry and the Ohio State Forestry Society, he being president of the latter organization. The Congress concerns itself with the conservation of all natural resources; forests, water and water ways, minerals

and soil. This year's session was devoted to the conservation of the vital resources, more particularly animal life.

The initial meeting of the Horticultural Society was held Tuesday, October 1, for the purpose of organization for the year. Plans were laid for the Apple Show which is to be held early in December. Officers elected for the coming year were: President, C. L. Long; Vice-President, C. G. Carpenter; Secretary-Treasurer, Cecil Burkholder.

Two graduates of the Domestic Science Course, Miss Josephine Mathews and Mabel Miskimen, are touring the state demonstrating Ohio wheat flour. Many people aver that imported spring wheat flour is better for bread making than our own. The demonstrators give three exhibitions in each town, after conferring with the miller to secure his help to obtain stoves and utensils. Through these demonstrations many people have become interested in the Domestic Science Course.

Agricultural special trains start this year with the one run over the Hocking Valley, Oct. 21-25. Lectures on Hog Raising, Poultry Raising and Soil Improvement will be given.

Prof. W. L. Paddock visited Northern Maryland the last Saturday in September. Prof. Paddock was looking over a large orchard development scheme being propagated by capitalists.

The reception given by Townshend Literary Society to the new members and prospective members was a decided success. More than 300 men filled the society room and halls to overflowing. President Kile, after a few words of welcome, introduced Dean Price, who

spoke of the value and need of such a training as that to be obtained at Townshend Literary Society. Prof. Gusler and Mr. Earl Jones also spoke. Cider, doughnuts and ginger bread were served and the thirst of the assembled guests did not subside until an entire barrel of cider was imbibed.

Fifty new members handed in their names. The night of meeting has been changed to Monday, since this seems to accommodate a greater number.

The Animal Husbandry Department exhibited two yearling colts at this year's State Fair, viz: Ohio's Hero and On Time. The former took first place in the Futurity Class, thus winning for our College the beautiful silver cup offered by Mr. E. B. White, of Leesburg, Va. On Time won fifth place in the same class.

The Fourth Ohio Apple Show will be held at Zanesville, O., Jan. 20-24, 1913. The show is conducted by the Ohio State Horticultural Society, which has offered \$1,000 in prizes this year. F. H. Ballou, of Newark, is secretary of the society.

The two boys' judging contests held at county fairs this year under the auspices of the College of Agriculture have been successful and aroused much interest among farm boys. The one held at the Seneca County Fair included 45 boys, ranging in ages from 12 to 21 year, and the one at the Logan County Fair included a dozen boys. In both contests, horses, cattle and hogs were judged by the boys. The first premium consisted of a scholarship to the Ohio State University. Other premiums were free trips to Niagara Falls, to the Ohio Experiment Station at Wooster, and to the Ohio State Fairs.

The University Dairy's fame is further spreading over the city by the output of a new product, called fermented milk. The active principal in this milk is a bacteria, termed bacillus bulgaricus, which acts as an intestinal disinfectant. For this reason it is believed to prolong life. Considerable quantities are being made regularly for down-town disposal.

Dr. C. E. Marshall, Dean of the Massachusetts Agricultural College, was a visitor at the Agricultural College on Sept. 30.

Prof. C. S. Plumb judged the Holstein-Friesian rings at the New York State Fair this year.

Attendance was good at the first meeting of the Saddle and Sirloin Club, held Thursday, Sept. 26, for the purpose of organizing for the year. A movement was started to obtain money to send the judging teams to Chicago this year. A committee was appointed to confer with a committee of the other agricultural societies regarding a plan of raising the money. Officers elected for the coming semester were: President, H. D. Drain; Vice-President, Carl Gearhart; Secretary-Treasurer, George Crane.

Prof. F. S. Jacoby's prediction of five-cent eggs for the coming winter has caused considerable comment among poultry men throughout the country. Several authorities have backed the professor in his statement that this high price would be due to the high price of poultry last spring, when the farmers sold their layers instead of keeping them, and the poor luck in hatching last spring. At present the price of eggs in New York is far in advance of the usual price at this season.

Word has been received by Prof. Wendell Paddock from W. Benbower, who is in the Department of Agriculture at Allababad Christian College, India. Mr. Benbower states that his thoughts, during the hot, parched summer season in India, wander back to the pleasures of dreamland, Ohio, where at the same time the country is luxuriously clothed in vegetation. Water is lacking there, rather than warmth during this season. When the rainy season starts, however, it brings true spring conditions.

Sam Higginbottom, who is also teaching there, has just recovered (Aug. 15) from typhoid fever, which disease he contracted last March.

The Agricultural Chemistry Laboratory has been enlarged to twice its former capacity. It will now provide room for 513 workers. An additional 160 new lockers have been ordered for the Dairy Laboratory.

Additions to the teaching staff have been notable this year, especially in the College of Agriculture. The Animal Husbandry Department has three new instructors. They are Donald J. Kays, who was raised on a large stock farm in North-Central Illinois and a 1912 graduate of the University of Illinois; William Hislop, raised on a farm near Edinburgh, Scotland, and graduated from Edinburgh University, 1910, with a M. S. degree from Kansas last June; and Gilbert Gusler, who was raised on a farm near Paulding, O., and graduated here last June.

R. B. Stolz, another 1912 Ohio State graduate, takes a position of instructor in the Dairy Department.

M. C. Lewell, new assistant in Soils, spent three years in irrigation work in Colorado before taking his degree at

Kansas Agricultural College last year.

Ralph Jeffries, a graduate of Colorado Agricultural College, is new in the Horticultural Department. His special line is fruits, having spent three years at orchard inspecting in Colorado.

The apple packing demonstrations are being carried on by Mr. Ed. Rowan in Southern Ohio. Mr. Rowan is an expert apple packer and has had a number of years' experience in Colorado.

Prof. Morse, of the Geology Department, has been engaged for several months in collecting and testing samples of stone from the various hard rock formations throughout Ohio, with the view of determining their fitness for road-building material. The work was begun by direction of the State Geologist, and will, indeed, be a timely aid to the good roads spirit which is aroused in Ohio.

Prof. R. L. Shields, Ohio State '09, is now located at Clemson College, S. C., where he has been placed in charge of the Animal Husbandry work of the Experiment Station. For the past two years Prof. Shields has been identified with the Animal Husbandry Department of Mississippi Agricultural College, leaving there to take up the more responsible work at Clemson.

Mr. John Chisholm, who was for several years Superintendent of the University Farm, is now located at Ramelton Farm, near Mansfield, O. Mr. Chisholm's perseverance and skill in agricultural science is already noticeable in the improved appearance and yield of

field crops and sleekness of animals. From present indications Ramelton is destined to become a model of production and rural beauty.

In 1898 Dean W. A. Henry, of the Wisconsin College of Agriculture, published his first edition of "Feeds and Feeding." In 1910 the tenth edition, revised and entirely re-written, was issued. The twelfth edition, 10,000 copies, has just come from the press. It is now printed in three languages. In 1907 a Portuguese translation by F. M. Draenert, San Paulo, Brazil, was published. A Russian translation prepared under the direction of Paul Dubrovsky, editor of "Agriculture and Forestry," by order of the Russian government for use of the Imperial Department of Agriculture and for schools, was published at St. Petersburg, Russia, in January, 1912. Practically all of the agricultural and veterinary colleges of America and many of the secondary schools of agriculture use "Feeds and Feeding" as a text and reference book. It is found in many of the public and school libraries and thousands of copies have gone into the libraries of farmers and stockmen.

Workmen are rapidly putting the finishing touches on the new tool building at the rear of the horse barn. The building, constructed at a cost of \$10,000, is made of the same material as the three adjoining live-stock buildings and will be a useful addition to that group.

Boxed Ohio apples are selling for \$1.75 in Columbus, as against \$1.25 for the same quality in barrels.

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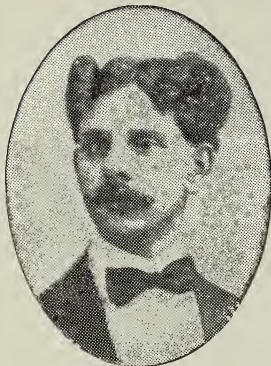
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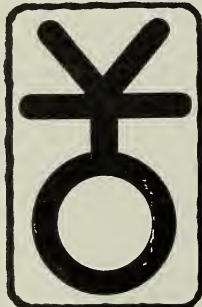


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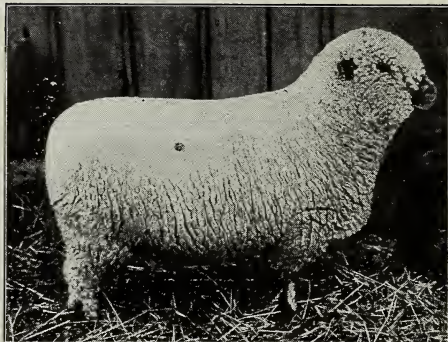
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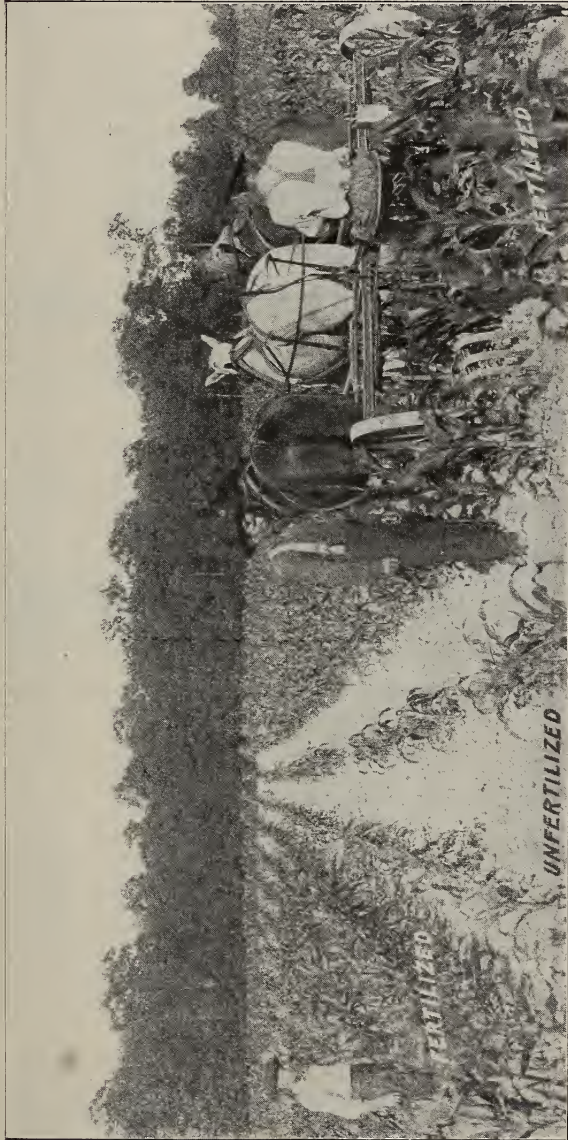
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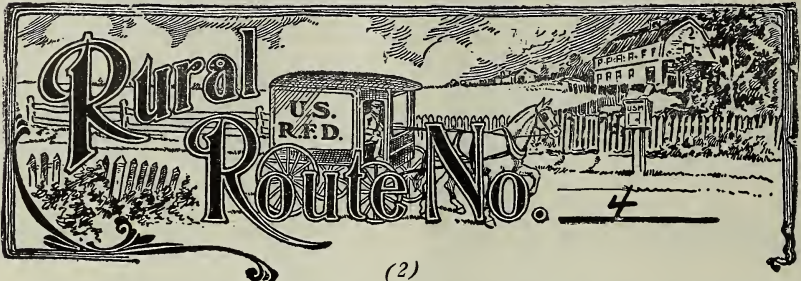
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Copy of a Page from Father's Letter



(2)

no rain in October and the wheat is small and does not look like it would stand the winter well.

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I figure that a ton of Muriate of Potash on 40 acres of corn will pay for a year's post graduate study for you and leave you a little spare change to chip in for athletics.

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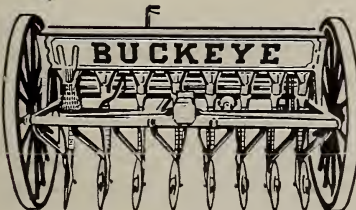
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a wise buy."*

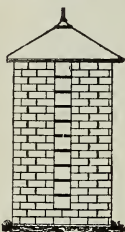


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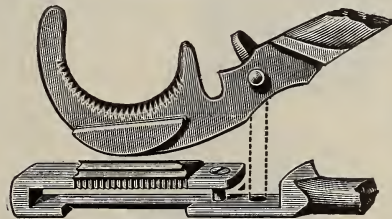
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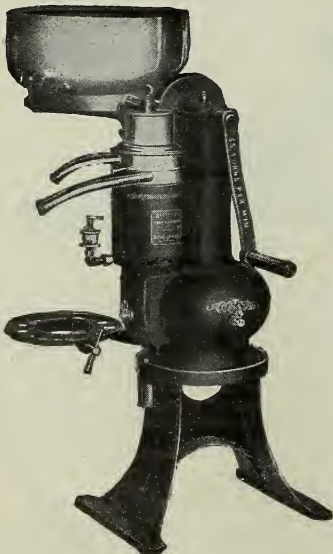
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